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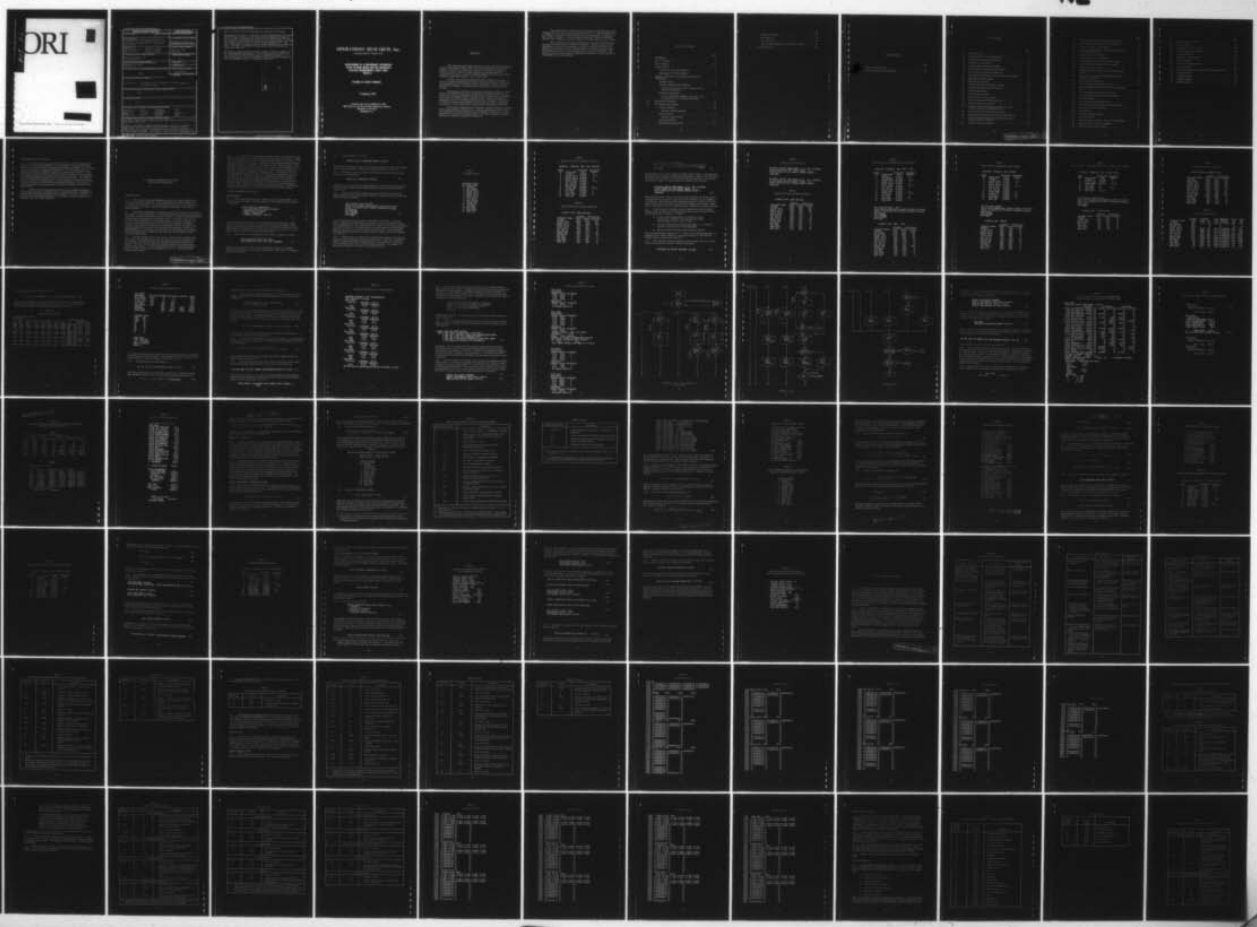

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

This report documents the second phase of the multi-phase Integrated Facilities Requirements Study (IFRS).

In Phase I, two analytic submodels were developed. The first, a Logistics Support Requirements Generator, estimates personnel, aircraft, and fuel requirements for each phase of undergraduate pilot training at the Naval Air Training Command (NATRACOM). The second, a Pacing Facilities Requirements sub-

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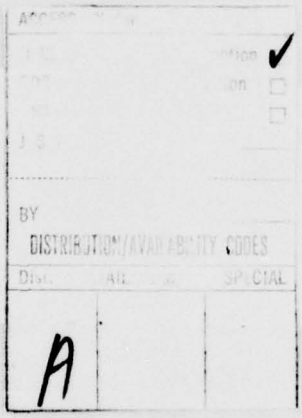
model, calculates facility requirements for each phase of training.

The purpose of the Phase II study was to develop a preliminary total systems IFRS management planning tool (including the two submodels developed in Phase I, as well as Base Loading, Facilities Excess/Deficiency, and Total Cost submodels), and automate the model so that it provides quick, accurate, and relevant information for use in the decision-making process. The present IRFS model is working to provide useful information to the decision-maker. Refinement and expansion of the present Phase II model will be completed in Phase III.

This report is composed of four volumes. Volume I contains a summary of the IFRS management planning tool. A detailed discussion of each of the five submodels and associated data files is contained in Volume II. A manual discussing the use of the automated model is provided in Volume III and the programmer's manual is contained in Volume IV.



OPERATIONS RESEARCH, Inc.

SILVER SPRING, MARYLAND

DEVELOPMENT OF A PRELIMINARY AUTOMATED TOTAL SYSTEMS MODEL FOR THE INTEGRATED FACILITIES REQUIREMENTS STUDY (IFRS) PHASE II

VOLUME III—USER'S MANUAL

9 February 1970

Prepared under Contract N00025-67-C-0031 (NBy-78672) for the Naval Facilities Engineering Command Department of the Navy Washington, D.C.

FOREWORD

This report documents the second phase of the multi-phase Integrated Facilities Requirements Study (IFRS). It has been prepared for the Systems Analysis Division of the Office of the Assistant Commander for Facilities Planning (Code 20), Naval Facilities Engineering Command (NAVFAC), Department of the Navy, as part of Contract N00025-67-C-0031 (NBy-78672) awarded to Operations Research, Inc., in June 1969.

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The IFRS model was developed and programmed by staff members of the Economic Analysis Division of Operations Research, Inc., under the direction of Dr. William J. Leininger, Vice President and Division Director, and Thomas N. Kyle, Project Manager. The project team members were Richard D. Heilbron, John H. Avila, Frederick L. McCoy, Thomas L. Shaffer, and Dr. Joan L. Turek.

Mr. Dennis Whang of the Systems Analysis Division of Facilities Planning was contract monitor for NAVFAC. In addition, valuable assistance was provided by many other Navy personnel including, in particular, those in the Office of the Staff Civil Engineer and the Training/Plans Division of the Naval Air Training Command and in the Systems Analysis Division of NAVFAC. The authors gratefully acknowledge the contributions made by all of these people to the development of the IFRS model.

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I. INTRODUCTION

PURPOSE OF THE USER'S MANUAL

1.1 The purpose of this manual is to provide the decision maker with detailed instructions for the use of the Integrated Facilities Requirements Study (IFRS) model. The overall flow of control within the IFRS model appears in Figure 1. This figure illustrates the various data files, inputs required, outputs received, and the following major system submodels.

- Logistics Support Requirements (LSR) Generator
- Base Loading Submodel
- Facilities Requirements Submodel
- Excess/Deficiency Submodel
- Total Systems Cost (TSC) Submodel.

As discussed in Volumes I and II of this report, these submodels are sequentially related, and the output of each is printed by the time-sharing terminal as well as automatically entered as input data to one or more successive models. The Pilot Training Rate (PTR) and the assignment of training phases to particular Naval Air Stations (NASs) are entered through the terminal by the decision maker.

1.2 The user should familiarize himself with the following sections of this manual to realize the greatest effectiveness and flexibility in the use of the IFRS model. It is also recommended that he become familiar with the standard operating procedures for the computer on which the IFRS model is programmed, the General Electric GE 635 time-sharing computer.

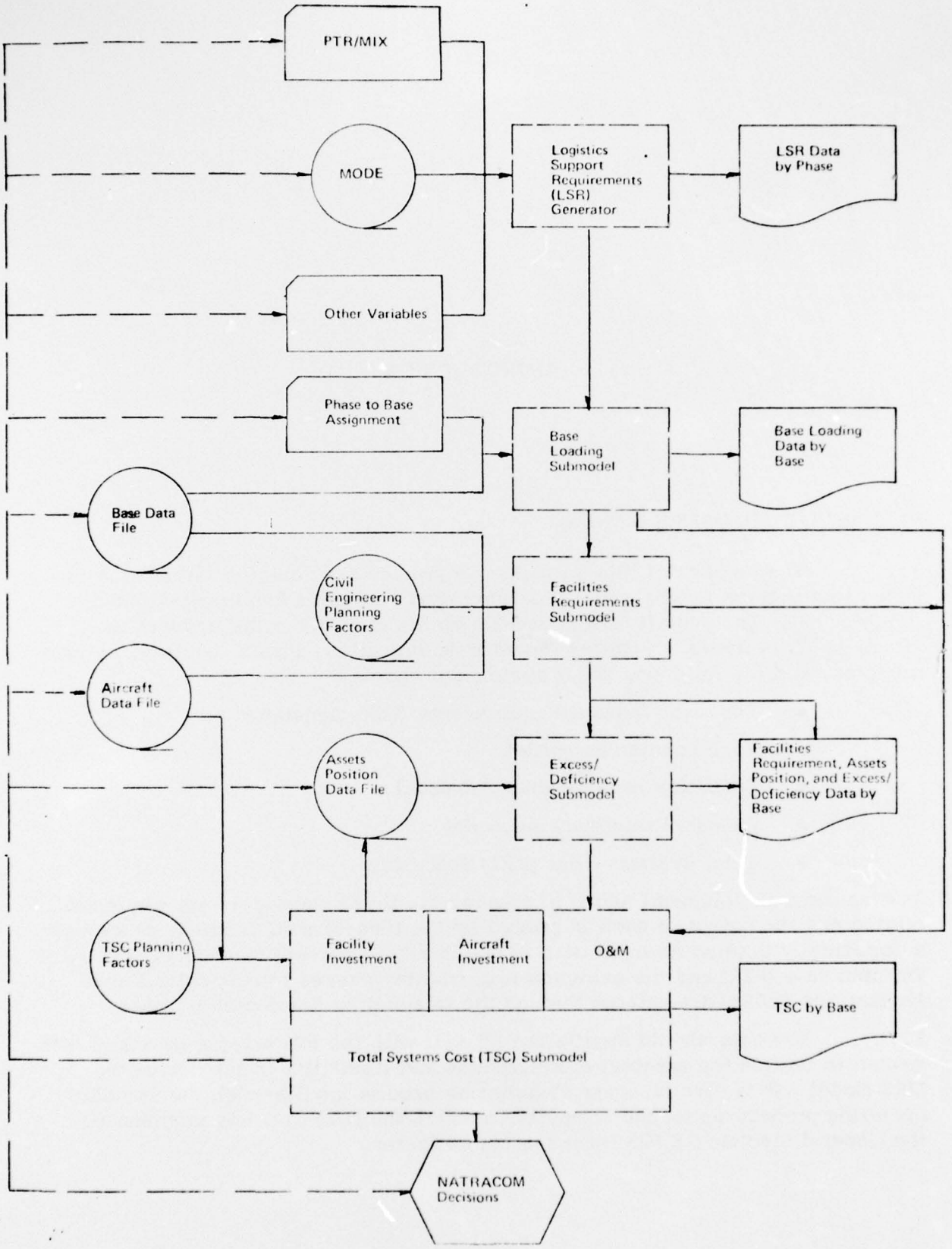


FIGURE 1. IFRS SIMULATION CONCEPT

ORGANIZATION OF THE MANUAL

1.3 The IFRS system can be entered at three points. The LSR Generator is entered by running program XLSRM*. From this program the entire IFRS system can be run. The Base Loading Submodel and subsequent submodels can be entered directly, if desired, by running program PART2*. The IFRS system can also be entered at the Excess/Deficiency Submodel by running program PART6*. If the IFRS system is entered at PART2* or PART6*, the data generated in the previous LSR Generator run are used as input to the following submodels. The availability of entry after the LSR Generator can save the user valuable time. If he wants to analyze one PTR in various phase to base assignments, he runs the LSR Generator once and re-enters at PART2* for new phase assignments. If he wants to change the facility substandard option in the Excess/Deficiency program, he re-enters PART6*.

1.4 Section II of this manual discusses the general operating procedures and extended operations of the IFRS model. Section III contains a description of the diagnostic messages provided for the assistance of the user. Section IV describes data file updating procedures, and Section V contains instructions for operation of the IFRS utility programs.

II. GENERAL OPERATING PROCEDURES AND EXTENDED OPERATIONS

INTRODUCTION

2.1 This section on general operating procedures for using the IFRS system is divided into three subsections. The first describes the normal operation of the LSR Generator Submodel. The second describes the use of the remaining system submodels. The third describes the extended capabilities of the LSR Generator submodel.

2.2 An important distinction exists between the LSR Generator and the combined Base Loading, Excess/Deficiency, Facilities Requirements, and Total Systems Cost Submodels. Both of these parts can be run separately, but the LSR Generator offers the added capability of operation in an extended mode. For example, the user can generate several LSRs without ever allocating phases to bases. Similarly, for one given set of LSR data output, the user can run several phase allocation schemes, alter options on acceptance of substandard facilities, or select other options described below without re-entering the LSR Generator. In the most straightforward case, of course, the user enters the LSR Generator and continues directly through the Base Loading and Total Systems Cost Submodels without leaving the IFRS system.

2.3 The LSR Generator may be used in both normal and the extended modes. A description of the former permits the user to gain an initial understanding of the operation of the LSR Generator with unmodified data and unconstrained resources. The user can then master the extended operations described subsequently in this section. The data modifications allowed in the extended operation of the LSR Generator can be completed on-line, i.e., during the actual running of the program.

2.4 It is assumed in the following descriptions of the use of the IFRS system that the user supplies the correct responses to instructions or questions. Affirmative and negative responses are indicated by typing Y for Yes, or N for No. For these and other forms of response, formats are always given with the indicated computer instruction, or question. Wherever possible, formats are free, meaning that the user can type his response, when it consists of a sequence of items, by merely typing a comma between each item. When alphabetic character information is required, the format is generally strict. The notation used in the question from the computer to indicate the format for the appropriate response is as follows: II, or XX, or XX.XX, etc. indicate that a numeric response is expected, the decimal often indicating that the input need not be in whole numbers; AA indicates that an alphabetic character response is expected, the number of letters appearing in the question indicating the number expected in the response. Responses are generally checked for validity. The diagnostic messages returned to the user are discussed in Section III of this volume.

GENERAL OPERATING PROCEDURES

LSR Generator

2.5 The automated IFRS model is entered by running program XLSRM*, the compiled version of LSRM. After the computer system begins running, question 1 is printed.

```
ENTER LEVEL ØF CØMPLEXITY
1 NØ ADJUSTMENTS ØR MØDIFICATIØNS
2 CØNSTRAIN LSR ØUTPUT
3 MØDIFY PHASE DATA
4 CØMBINE ØPTIØNS 2 AND 3?1
```

(1)

This and the following samples of the conversational mode will show, underlined, a sample user's response to a question posed by the computer. If the user does not wish to modify the LSR data base or constrain the output from the LSR Generator, a response of 1 is given. (For levels of complexity 2, 3, and 4, refer to the subsection below on Extended Operations.)

2.6 After the level of complexity has been entered, question 2 is asked.

```
ENTER TRAINING WEEKS PER YEAR
AND ANNUAL FLY-DAYS (XX.,XXX.)?50.245
```

(2)

The user must enter the number of weeks and training days to be scheduled annually for pilot training. Note that an input format, (XX., XXX.), is provided as an aid to the user.

2.7 Next, question 3 is asked.

```
PRINT LIST ØF TRAINING PHASES (Y,N)?Y          (3)
```

The user must respond Yes or No. A Yes response produces a list of the training phase names and numbers contained in the LSR data base (see Table 1).

2.8 With a No response or after the training phase list has been printed, the user is asked question 4.

```
PRINT ALL PIPELINES (Y,N)?Y                    (4)
```

Following a Yes response, the computer produces a complete list of all training phases in each training pipeline along with their sequence and attrition rates (see Table 2).

2.9 When a No response is given or upon completion of the printing of pipeline data, the automated system in question 5 requests the user to enter the PTR for the training pipeline.

```
FØR PIPELINE NAVY ØFFICER
ENTER PHASE NUMBER AND STUDENT ØUTPUT (XX,XXXX.)
PHASE 0,0 IMPLIES NØ FURTHER ASSIGNMENTS?7,172
NEXT?8,173
NEXT?11,410
NEXT?14,100
NEXT?0,0                                       (5)
```

In his response the user may enter as many PTRs as he desires, so long as there is sufficient information for the automated system to compute the PTR for the remaining phases. (See LSR diagnostic message 2067 for a further explanation of invalid PTR entries.) Note that after the user has entered the desired phase PTRs, he must type 0,0 to tell the system he has finished. When all phase - PTR data have been entered, the training pipeline student statistics are printed (see Table 3).

2.10 Generally the user selects the terminal training phases in the training pipeline for PTR assignments (response to question 5). However, the user may wish to constrain the terminal training phases or other phases by assigning a PTR to a training phase early in the pilot training program. For example, he may desire to respond to question 5 in the following way:

TABLE 1

LSR PHASE CODES

TRAINING PHASES NØ.	PHASE NAME
1	PRIMARY
2	AØC SCHØØL
3	FLIGHT SYS.
4	BASIC JET-A
5	BASIC JET-B
6	B-JET G/CQ
7	ADV JET-TF
8	ADV JET-TA
9	BASIC PRØP
10	B-PRØP CQ
11	ADV PRØP
12	PRE HELØ
13	HELØ PRIM
14	HELØ ADV

TABLE 2

TRAINING PHASES IN A TRAINING PIPELINE

TRAINING PIPELINE FØR NAVY ØFFICER

PHASE NØ.	PHASE NAME	ATTRITIØN RATE	FØLLØWING PHASES
1	PRIMARY	0.0900	3
3	FLIGHT SYS.	0.0270	4, 9
4	BASIC JET-A	0.0500	5
5	BASIC JET-B	0.0200	6
6	B-JET G/CØ	0.0200	7, 8
7	ADV JET-TF	0.0400	
8	ADV JET-TA	0.0400	
9	BASIC PRØP	0.1400	10
10	B-PRØP CØ	0.0040	11, 12
11	ADV PRØP	0.0080	
12	PRE HELØ	0.0050	13
13	HELØ PRIM	0.0020	14
14	HELØ ADV	0.0020	

TABLE 3

TRAINING PIPELINE STUDENT STATISTICS

STUDENT TYPE NAVY ØFFICER

TRAINING PHASE	•STUDENT INPUT	STATISTICS• ØUTPUT	ATTRITES
PRIMARY	1123.	1022.	101.
FLIGHT SYS.	1022.	994.	28.
BASIC JET-A	394.	374.	20.
BASIC JET-B	374.	367.	7.
B-JET G/CØ	367.	359.	7.
ADV JET-TF	179.	172.	7.
ADV JET-TA	180.	173.	7.
BASIC PRØP	600.	516.	84.
B-PRØP CØ	516.	514.	2.
ADV PRØP	413.	410.	3.
PRE HELØ	101.	100.	1.
HELØ PRIM	100.	100.	0.
HELØ ADV	100.	100.	0.

```
FOR PIPELINE NAVY OFFICER
ENTER PHASE NUMBER AND STUDENT OUTPUT (XX,XXXX.)
PHASE 0,0 IMPLIES NO FURTHER ASSIGNMENTS?1,1022
NEXT?0,0
```
(5)

The automated system could compute the PTR of Flight Systems, since this training phase is the only phase following primary training. However, the determination of the PTR mix of Basic Jet A and Basic Prop would require a user decision. Responding to question 5a permits the user to maker such a decision.

```
RESIDUAL OUTPUT FROM PHASE  3 IS  994. STUDENTS
DIVIDE AMONG THE FOLLOWING PHASES  4, 9
ENTER APROPIATE MIX (XXXXX.,XXXXX.,XXXXX.)
?394,600
```
(5a)

The automated system continues to ask the user to allocate the PTR among other sequential phases (see Table 4) until the student statistics can be computed (see Table 5). Note that the student statistics presented in Tables 3 and 5 are almost identical since the PTRs selected for the example were similar. Differences in final digits in the two tables arise from variability in computer rounding.

2.11 After the student statistics have been printed for the first training pipeline in the LSR data base, the following situation occurs for the remaining training pipelines (see Tables 6, 7, and 8).

- A list of each training phase, its sequence, and its attrition rate is printed. Note that this only occurs when question 4 receives a Yes response.
- The user must enter the training phase PTRs, i.e., respond to question 5 and also to 5a, when appropriate.
- Student statistics for each training phase are printed.

When all training phase PTRs have been computed for all training pipelines, an aggregate of the student statistics is printed (see Table 9). Next the LSR summary output is printed (see Table 10).

2.12 When the LSR summary statement has been printed, the user is asked in question 6 whether he desires a detailed LSR output.

```
DETAILED LSR ØUTPUT DESIRED (Y,N)?N
```
(6)

TABLE 4

RESPONSES TO QUESTION 5a

```
RESIDUAL OUTPUT FROM PHASE  6 IS  360. STUDENTS
DIVIDE AMONG THE FOLLOWING PHASES  7, 8
ENTER APROPIATE MIX (XXXXX.,XXXXX.,XXXXX.)
?180,180

RESIDUAL OUTPUT FROM PHASE 10 IS  514. STUDENTS
DIVIDE AMONG THE FOLLOWING PHASES 11,12
ENTER APROPIATE MIX (XXXXX.,XXXXX.,XXXXX.)
?413,101
```

TABLE 5

TRAINING PIPELINE STUDENT STATISTICS

STUDENT TYPE NAVY OFFICER

	•STUDENT STATISTICS•		
TRAINING PHASE	INPUT	OUTPUT	ATTRITES
PRIMARY	1123.	1022.	101.
FLIGHT SYS.	1022.	994.	28.
BASIC JET-A	394.	374.	20.
BASIC JET-B	374.	367.	7.
B-JET G/CQ	367.	360.	7.
ADV JET-TF	180.	173.	7.
ADV JET-TA	180.	173.	7.
BASIC PROP	600.	516.	84.
B-PROP CQ	516.	514.	2.
ADV PROP	413.	410.	3.
PRE HELO	101.	101.	1.
HELO PRIM	101.	100.	0.
HELO ADV	100.	100.	0.

TABLE 6

TOTAL PIPELINE INFORMATION FOR NAVAL AOCs

TRAINING PIPELINE FØR NAVY - AØC

PHASE NØ.	PHASE NAME	ATTRITIØN RATE	FØLLØWING PHASES
1	PRIMARY	0.1400	2
2	AØC SCHØØL	0.0730	3
3	FLIGHT SYS.	0.0320	4, 9
4	BASIC JET-A	0.0800	5
5	BASIC JET-B	0.0310	6
6	B-JET G/CQ	0.0160	7, 8
7	ADV JET-TF	0.0520	
8	ADV JET-TA	0.0520	
9	BASIC PRØP	0.2400	10
10	B-PRØP CQ	0.0060	11,12
11	ADV PRØP	0.0120	
12	PRE HELØ	0.0060	13
13	HELØ PRIM	0.0050	14
14	HELØ ADV	0.0050	

FØR PIPELINE NAVY - AØC
ENTER PHASE NUMBER AND STUDENT ØUTPUT (XX,XXXX.)
PHASE 0,0 IMPLIES NØ FURTHER ASSIGNMENTS?7,173
NEXT?8,172
NEXT?11,500
NEXT?14,150
NEXT?0,0

STUDENT TYPE NAVY - AØC

TRAINING PHASE	•STUDENT INPUT	STATISTICS• ØUTPUT	ATTRITES
PRIMARY	1667.	1434.	233.
AØC SCHØØL	1434.	1329.	105.
FLIGHT SYS.	1329.	1287.	43.
BASIC JET-A	415.	382.	33.
BASIC JET-B	382.	370.	12.
B-JET G/CQ	370.	364.	6.
ADV JET-TF	182.	173.	9.
ADV JET-TA	181.	172.	9.
BASIC PRØP	872.	662.	209.
B-PRØP CQ	662.	658.	4.
ADV PRØP	506.	500.	6.
PRE HELØ	152.	152.	1.
HELØ PRIM	152.	151.	1.
HELØ ADV	151.	150.	1.

TABLE 7

TOTAL PIPELINE INFORMATION FOR MARINES

TRAINING PIPELINE FØR MARINE

PHASE NØ.	PHASE NAME	ATTRITIØN RATE	FØLLØWING PHASES
1	PRIMARY	0.0500	3
3	FLIGHT SYS.	0.0150	4, 9
4	BASIC JET-A	0.0400	5
5	BASIC JET-B	0.0100	6
6	B-JET G/CQ	0.0100	7, 8
7	ADV JET-TF	0.0300	
8	ADV JET-TA	0.0300	
9	BASIC PRØP	0.0900	10
10	B-PRØP CQ	0.0050	12
12	PRE HELØ	0.0040	13
13	HELØ PRIM	0.0020	14
14	HELØ ADV	0.0020	

FØR PIPELINE MARINE
ENTER PHASE NUMBER AND STUDENT ØUTPUT (XX,XXXX.)
PHASE 0,0 IMPLIES NØ FURTHER ASSIGNMENTS?7,137
NEXT?8,138
NEXT?14,285
NEXT?0,0

STUDENT TYPE MARINE

TRAINING PHASE	•STUDENT STATISTICS• INPUT	ØUTPUT	ATTRITES
PRIMARY	661.	628.	33.
FLIGHT SYS.	628.	619.	9.
BASIC JET-A	301.	289.	12.
BASIC JET-B	289.	286.	3.
B-JET G/CQ	286.	284.	3.
ADV JET-TF	141.	137.	4.
ADV JET-TA	142.	138.	4.
BASIC PRØP	317.	289.	29.
B-PRØP CQ	289.	287.	1.
PRE HELØ	287.	286.	1.
HELØ PRIM	286.	286.	1.
HELØ ADV	286.	285.	1.

TABLE 8

TOTAL PIPELINE INFORMATION FOR COAST GUARD AND FOREIGN

TRAINING PIPELINE FØR C-GRD & FØR.

PHASE NØ.	PHASE NAME	ATTRITIØN RATE	FØLLØWING PHASES
1	PRIMARY	0.0500	3
3	FLIGHT SYS.	0.0200	9
9	BASIC PRØP	0.0500	11,12
11	ADV PRØP	0.	
12	PRE HELØ	0.	13
13	HELØ PRIM	0.	14
14	HELØ ADV	0.0100	

FØR PIPELINE C-GRD & FØR.
ENTER PHASE NUMBER AND STUDENT ØUTPUT (XX,XXXX.)
PHASE 0,0 IMPLIES NØ FURTHER ASSIGNMENTS?11,40
NEXT?14,60
NEXT?0,0

STUDENT TYPE C-GRD & FØR.

TRAINING PHASE	•STUDENT INPUT	STATISTICS• ØUTPUT	ATTRITES
PRIMARY	114.	108.	6.
FLIGHT SYS.	108.	106.	2.
BASIC PRØP	106.	101.	5.
ADV PRØP	40.	40.	0.
PRE HELØ	61.	61.	0.
HELØ PRIM	61.	61.	0.
HELØ ADV	61.	60.	1.

TABLE 9

AGGREGATE STUDENT STATISTICS

TØTAL FØR ALL STUDENT TYPES

TRAINING PHASE	•STUDENT STATISTICS• INPUT	ØUTPUT	ATTRITES
PRIMARY	3565.	3192.	373.
AØC SCHØØL	1434.	1329.	105.
FLIGHT SYS.	3087.	3005.	82.
BASIC JET-A	1110.	1045.	65.
BASIC JET-B	1045.	1023.	22.
B-JET G/CQ	1023.	1007.	16.
ADV JET-TF	503.	482.	21.
ADV JET-TA	504.	483.	21.
BASIC PRØP	1895.	1568.	327.
B-PRØP CQ	1467.	1460.	7.
ADV PRØP	959.	950.	9.
PRE HELØ	601.	599.	3.
HELØ PRIM	599.	597.	2.
HELØ ADV	597.	595.	2.

TABLE 10

LSR SUMMARY STATEMENT

TRAINING PHASE	STUDENT LØAD	AIRCRAFT TYPE	NØ.	FUEL TYPE	CØNSUMED GALLØNS	TØTAL ØFF	TØTAL ENL
PRIMARY	405.	T34B	129.	AGAS	0.131E+07	199.	379.
AØC SCHØØL	276.		0.		0.	8.	0.
FLIGHT SYS.	305.		0.		0.	9.	0.
BASIC JET-A	237.	T-2A	97.	JP-4	0.212E+08	159.	585.
BASIC JET-B	186.	T2BC	101.	JP-4	0.240E+08	133.	795.
B-JET G/CQ	142.	T2BC	58.	JP-4	0.113E+08	76.	493.
ADV JET-TF	197.	TF9J	170.	JP-4	0.589E+08	214.	1378.
ADV JET-TA	197.	TA4J	153.	JP-4	0.468E+08	210.	1264.
BASIC PRØP	658.	T28C	283.	AGAS	0.101E+08	323.	1347.
B-PRØP CQ	117.	T28C	36.	AGAS	0.111E+07	45.	238.
ADV PRØP	325.	TS2A	164.	A115	0.125E+08	257.	1599.
PRE HELØ	60.	T28C	18.	AGAS	0.710E+06	29.	102.
HELØ PRIM	48.	TH57	21.	AGAS	0.182E+06	31.	77.
HELØ ADV	95.	THIL	54.	JP-4	0.339E+07	82.	372.

Following a Yes response, all LSR data are printed for each training phase. Tables 11 and 12 provide, respectively, a sample detailed LSR output for Primary and Basic Prop CQ phases of training.

2.13 Next the user is asked in question 7 whether he wishes to generate another LSR output.

```
GENERATE ANØTHER LSR (Y,N)?N                    (7)
```

If he answers Yes, question 3 is again asked and the questioning sequence continues from that point.

2.14 When no further LSR outputs are desired, the automated system prints the runway requirements based on the last LSR (see Table 13). The last LSR generated then enters the Base Loading Submodel.

TABLE 11

DETAILED LSR OUTPUT FOR PRIMARY TRAINING

```
NAME ØF PHASE PRIMARY
STUDENT INPUT 3565.
STUDENT ØUTPUT 3192.
AVERAGE STUDENT LØAD  405.
ADMINISTRATIVE ØFFICERS   24.
TØTAL ØFFICERS  199.
TØTAL ENLISTED  379.
AIRCRAFT TYPES          T34B
NUMBER REQUIRED         129.
FUEL TYPES              AGAS
GALLØNS CØNSUMED   0.131E+07
FLIGHT INSTRUCTØRS      162.
UNDER TRAINING           13.
LSØ REQUIREMENTS          0.
ENLISTED SUPPØRT        379.
```

TABLE 12

DETAILED LSR OUTPUT FOR BASIC PROP CQ

```
NAME ØF PHASE B-PRØP CØ
STUDENT INPUT 1467.
STUDENT ØUTPUT 1460.
AVERAGE STUDENT LØAD  117.
ADMINISTRATIVE ØFFICERS   12.
TØTAL ØFFICERS   45.
TØTAL ENLISTED  238.
AIRCRAFT TYPES          T28C
NUMBER REQUIRED          36.
FUEL TYPES              AGAS
GALLØNS CØNSUMED   0.111E+07
FLIGHT INSTRUCTØRS       20.
UNDER TRAINING            2.
LSØ REQUIREMENTS         12.
ENLISTED SUPPØRT 16     238.
```

TABLE 13

RUNWAY REQUIREMENTS

TRAINING PHASE	A/C TYPE	EFFECTIVE RUNWAYS	AIRSPACE SATURATION	ØLF	TARGET AREAS
PRIMARY	T34B	1.077	0.649	0.497	0.
BASIC JET-A	T-2A	0.823	0.823	0.369	0.
BASIC JET-B	T2BC	0.644	0.644	0.289	0.
B-JET G/CQ	T2BC	0.514	0.514	0.198	0.
ADV JET-TF	TF9J	1.520	0.168	0.524	0.
ADV JET-TA	TA4J	1.524	0.169	0.525	0.
BASIC PRØP	T28C	1.313	0.437	0.685	0.
B-PRØP CQ	T28C	0.389	0.013	0.280	0.
ADV PRØP	TS2A	1.357	0.335	0.431	0.
PRE HELØ	T28C	0.144	0.009	0.064	0.
HELØ PRIM	TH57	0.452	0.452	0.114	0.
HELØ ADV	THIL	0.508	0.508	0.113	0.

Base Loading Through Total Systems Cost Submodels

2.15 Having entered the Base Loading Submodel either from the LSR Generator or directly (by running program PART2*) the program asks for the first phase to base allocation (i.e., assignment) in question 8.

```
PHASE ALLØCATIØN:  ASSIGN EACH PHASE AS--
II,AAAA,.XX
WHERE: II = PHASE (2 DIGITS); AAAA = BASE CØDE;
       .XX = PERCENT AT BASE (1.0 = 100%)
BASE CØDES: CHAS CORP ELLY
            KING MERI PENS
            SAUF WHIT PHAN
II = 0 TØ TERMINATE:?01,SAUF,1.
```
(8)

The user supplies the first assignment, and dialogue 9 follows.

```
NEXT?02,PENS,1.
NEXT?03,PENS,1.
NEXT?04,MERI,1.
NEXT?05,MERI,1.
NEXT?06,PENS,1.
NEXT?07,KING,1.
NEXT?08,CHAS,1.
NEXT?09,WHIT,1.
NEXT?10,SAUF,1.
NEXT?11,CØRP,1.
NEXT?12,PENS,1.
NEXT?13,ELLY,1.
NEXT?14,ELLY,1.
NEXT?0
```
(9)

The system then responds with question 10.

DO YOU WANT DETAILED BASE LOADING DATA (Y,N)?N (10)

A No response produces the information appearing in Table 14. A Yes response produces a detailed base loading analysis for each base. An example of one such detailed breakdown for NAS Pensacola appears in Table 15.

TABLE 14

BASE LOADING SUMMARY

BASE LOADING SUMMARY

*PERSONNEL								*AIRCRAFT		*FUEL	
	STD.	----------BASE TOTALS----------								MILLION GAL.	
NAS	LOAD	PHASE	NAS	OFF	ENL	CIV	TOTAL	TYPE	NO.	TYPE	AMOUNT
CHAS	197.	1672.	951.	267.	1829.	330.	2623.	TA4J	153.	JP-4	46.79
CORP	325.	2180.	2565.	602.	3639.	5900.	10466.	TS2A	164.	A115	12.45
ELLY	143.	705.	701.	152.	923.	188.	1406.	TH57	21.	AGAS	0.18
								THIL	54.	JP-4	3.39
KING	197.	1739.	982.	271.	1954.	349.	2771.	TF9J	170.	JP-4	58.89
MERI	423.	2096.	1065.	370.	1996.	387.	3176.	T-2A	97.	JP-4	45.20
								T2BC	101.		
PENS	783.	1501.	2902.	786.	2822.	7716.	12106.	T2BC	58.	JP-4	11.28
								T28C	18.	AGAS	0.71
SAUF	522.	1383.	877.	307.	1155.	277.	2260.	T34B	129.	AGAS	2.42
								T28C	36.		
WHIT	658.	2328.	1133.	401.	2004.	442.	3504.	T28C	283.	AGAS	10.10

TABLE 15

DETAILED BASE LOADING PRINTOUT

NAS--PENS

PERSØNNEL	STD.LØAD	ØFFICERS	ENLISTED	CIVILIAN	TØTAL
AØC SCHØØL	276.	8.	0.		285.
FLIGHT SYS.	305.	9.	0.		314.
B-JET G/CØ	142.	76.	493.		712.
PRE HELØ	60.	29.	102.		191.
ALL PHASES	783.	122.	595.		1501.
TENANTS		529.	954.	6220.	7703.
NAS PERS.		134.	1272.	1496.	2902.
TØTAL BASE		786.	2822.	7716.	12106.

AIRCRAFT DATA

TYPE	NØ.
T2BC	58.
T28C	18.
VF	2.
VT	19.
VR	8.
VØ	1.
VW	1.
H	5.

FUEL DATA

TYPE	GALLØNS
JET	0.114E+08
AGAS	0.610E+07
HELØ	0.

Note that personnel are broken down by phase of training and that, in addition to the data in the summary display, tenant aircraft and fuel are included in the detailed display. For the Yes option, no summary is given.

2.16 The computer next asks question 11.

DØ YØU WISH TØ RE-ALLØCATE PHASES (Y,N)?N (11)

This option allows the user to reallocate if he wishes to change the loading data displayed in Tables 14 or 15. A Yes response produces question 12.

TYPE FIRST BASE ASSIGNMENT?01,KING,1. (12)

Following the response the dialogue proceeds as in dialogue 9.

2.17 Following a No response to question 11, the system proceeds to the airspace factors and OLF requirements, now aggregated by base, and asks question 13.

```
AIRSPACE FACTORS & ØLF REQUIREMENTS:
SKIP PRINTOUT (Y,N)?Y                                    (13)
```

Since these data were displayed by phase in the LSR Generator printout, the user may not wish to see them here. For the Yes response, no further printout occurs until the program reaches the runway computations and the program asks question 16 described below. A No response produces the printout by base shown in Table 16. Following the printout shown in Table 16, the program asks question 14.

```
DO YOU WISH TO RE-ALLOCATE PHASES TO BASES (Y,N)?N        (14)
```

A Yes response sends the user back to question 12 and then to dialogue 9. A No response sends the user to question 16.

2.18 If for any base the airspace, as indicated in Table 16, is oversaturated, the following message, question 15, is printed immediately following the printout for that base.

```
NOTE: AIRSPACE IS OVER-SATURATED
DO YOU WISH TO CONSTRAIN LSR OUTPUT (Y,N)?N              (15)
```

A Yes response would result in a transfer to the LSR Generator and the user would then return to question 3.

2.19 Assuming the user chooses not to return to the LSR Generator, after the OLF and airspace printouts, if any, the system asks question 16.

```
DØ YØU WANT TØ SKIP RUNWAY REQUIREMENTS ØUTPUT (Y,N)?N   (16)
```

If the answer, as shown, is No, then the system responds in the following manner with the total runway investment cost for all bases for both upgrading existing runways and building new ones.

```
TØTAL RUNWAY INVESTMENT FØR CURRENT YEAR (THØUS.):
424.
```

TABLE 16

AIRSPACE FACTORS AND OLF REQUIREMENTS

```
AIRSPACE FACTØRS & ØLF REQUIREMENTS:
SKIP PRINTØUT (Y,N)?N
NAS--CHAS
  TYPE A/C     AIRSPACE    ØLF'S
                FACTØR   REQUIRED
     TA4J         0.17      0.53
NAS--CØRP
  TYPE A/C     AIRSPACE    ØLF'S
                FACTØR   REQUIRED
     TS2A         0.33      0.43
NAS--ELLY
  TYPE A/C     AIRSPACE    ØLF'S
                FACTØR   REQUIRED
     TH57         0.45      0.11
     THIL         0.51      0.11
NAS--KING
  TYPE A/C     AIRSPACE    ØLF'S
                FACTØR   REQUIRED
     TF9J         0.17      0.52
NAS--MERI
  TYPE A/C     AIRSPACE    ØLF'S
                FACTØR   REQUIRED
     T-2A         0.82      0.37
     T2BC         0.64      0.29
NAS--PENS
  TYPE A/C     AIRSPACE    ØLF'S
                FACTØR   REQUIRED
     T2BC         0.51      0.20
     T28C         0.01      0.06
NAS--SAUF
  TYPE A/C     AIRSPACE    ØLF'S
                FACTØR   REQUIRED
     T34B         0.65      0.50
     T28C         0.01      0.22
NAS--WHIT
  TYPE A/C     AIRSPACE    ØLF'S
                FACTØR   REQUIRED
     T28C         0.44      0.68
DØ YØU WISH TØ RE-ALLØCATE PHASES TØ BASES (Y,N)?N
```

2.20 If the choice made in response to question 16 is to obtain printout, then the data shown in Table 17 (shown only for the first four bases) is produced. Note that for Corpus Christi, an additional printout and choice (question 17) is given as a result of the runway deficit. The response shown indicates that the deficit is to be corrected. The alternate response, not to make up the deficit, is shown in the following dialogue.

```
WILL THESE DEFICITS BE MADE UP (Y,N)?N
WHICH RUNWAYS WON'T BE BUILT OR UPGRADED
ENTER A NUMBER FROM PRECEDING TABLE--
TYPE 0 (ZERO) WHEN FINISHED?1
NEXT--0
```

Following this dialogue, the printout for the remaining bases would continue as shown in Table 17.

2.21 Next, by answering question 18, the user specifies the level of print detail he wishes to maintain for the remainder of the run for the particular year being analyzed.

```
WHICH LEVEL ØF PRINT DETAIL
TYPE 1 FØR TØTAL SYSTEMS CØST (TSC) ØNLY
     2 FØR TSC & DETAILED FACILITIES EXCESS-DEFICIENCY
     3 FØR TSC & NAS CØST SUMMARIES ØNLY
     4 FØR TSC & FACILITIES DEFICITS & NAS CØST SUMM.
     5 FØR CHØICE ØF DETAILS (IF DESIRED)?5          (18)
```

By typing 5, the user has the option to select only the printouts he desires. On the other hand, a lower level of print detail will speed up the run somewhat when limited printouts are desired. Although the subsequent descriptions deal with the options available under print level 5, a comprehensive picture of what printouts and options are available under the other print levels is given in Figure 2.

2.22 The next questions, 19 and 20, occur at the Excess/Deficiency portion of the program. This section of the IFRS is entered from the previous submodel or directly by running program PART6*. The user must decide whether or not to accept substandard facilities. A No response means no acceptance of substandard facilities for any base. A Yes response allows the user to further modify his choice from base to base and causes question 20 to be printed.

```
                                                  (19)
EXCESS DEFICIENCY PRØGRAM
ACCEPT SUBSTANDARD FACILITIES (Y,N)?Y
SAME ØPTIØN FØR ALL BASES (Y,N)?Y                 (20)
```

TABLE 17

RUNWAY REQUIREMENT BY BASE

```
NAS--CHAS
AVAILABLE:
AMØUNT LENGTH THICKNESS
 0.84   8000.      9
 0.84   8000.      9
 0.09   6000.      9
REQUIRED:
AMØUNT LENGTH THICKNESS
 1.52   8000.      2
 NØ RUNWAY DEFICITS


NAS--CØRP
AVAILABLE:
AMØUNT LENGTH THICKNESS
 0.84   8000.      9
 0.84   5000.      2
 0.82   5000.      2
 0.62   5000.      2
 0.64   5000.      2
REQUIRED:
AMØUNT LENGTH THICKNESS
 1.36   8000.      2
UPGRADE: LENGTH: 5000. TØ  8000.
THICKNESS:       2 TØ       2
CØST:     424. (THØUS.)
SUMMARY ØF RUNWAY UPGRADE/CØNSTRUCTIØN
NØ. LENGTH THICKNESS CØST (THØUS.)
 1   8000.      2       424.
 WILL THESE DEFICITS BE MADE UP (Y,N)?Y


NAS--ELLY
AVAILABLE:
AMØUNT LENGTH THICKNESS
 0.90   3350.      1
 0.10   3185.      1
 0.90   3125.      1
 0.90   3025.      1
REQUIRED:
AMØUNT LENGTH THICKNESS
 0.45    200.      1
 0.51    200.      1
 NØ RUNWAY DEFICITS


NAS--KING
AVAILABLE:
AMØUNT LENGTH THICKNESS
 0.92   8000.      9
 0.92   8000.      9
 0.08   8000.      9
 0.08   8000.      9
REQUIRED:
AMØUNT LENGTH THICKNESS
 1.52   8000.      3
 NØ RUNWAY DEFICITS
```

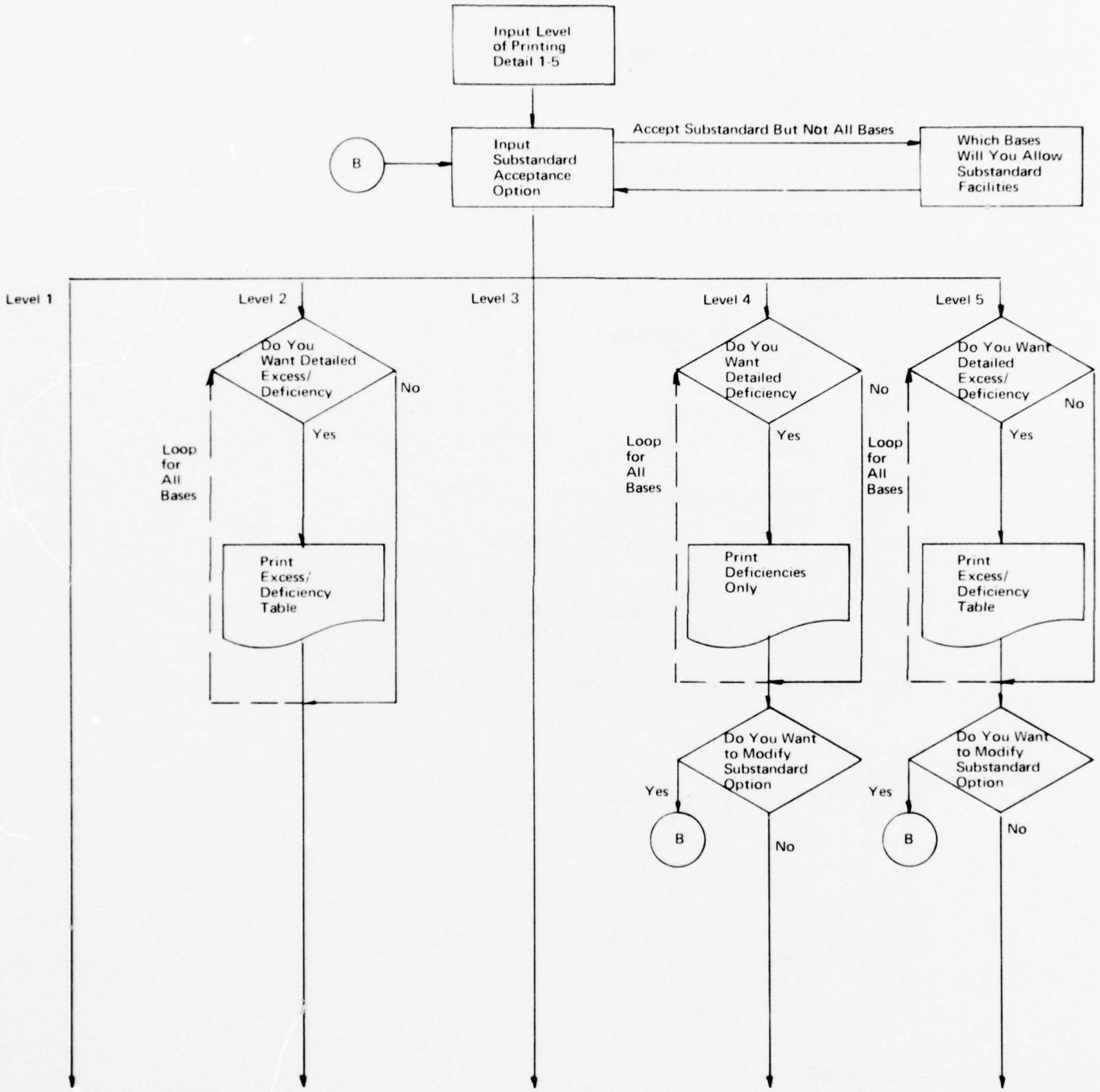


FIGURE 2. PRINT LEVEL QUESTIONS AND ANSWERS

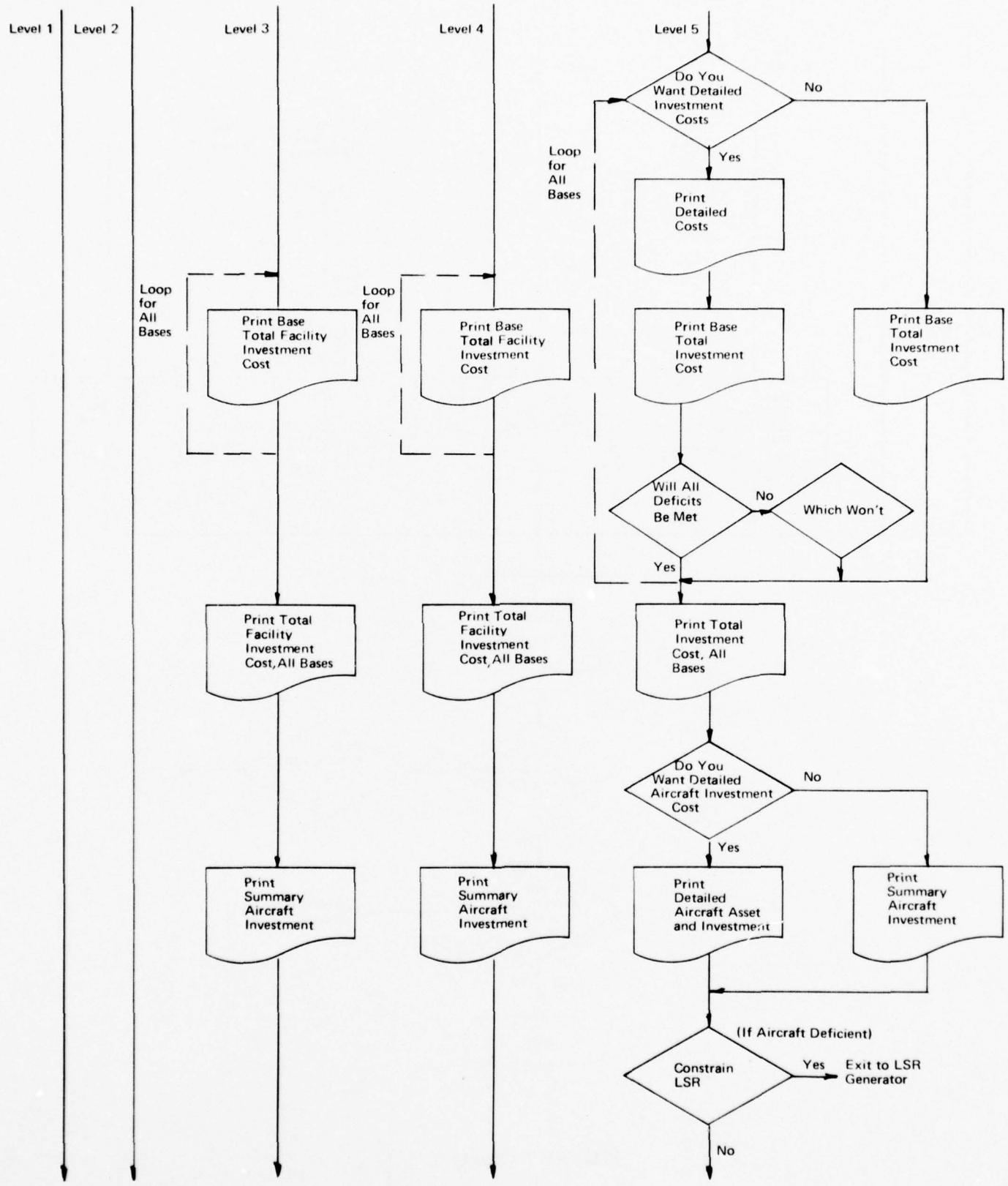


FIGURE 2 (Cont)

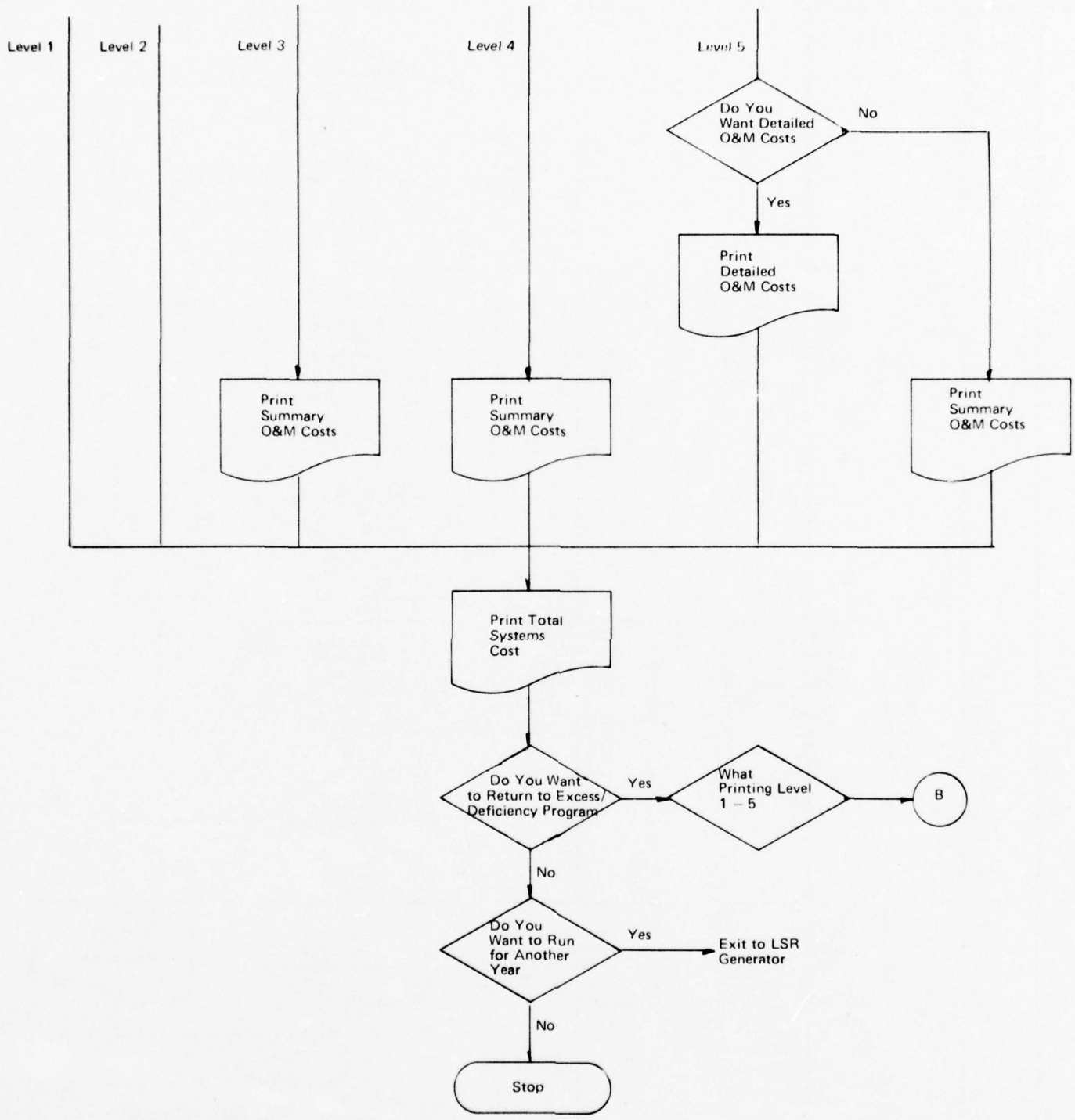


FIGURE 2 (Cont)

A decision to accept substandard facilities, but not for all bases, means that question 21 , which asks for acceptance of substandard facilities, is repeated for each base, as shown for NAS Chase.

```
EXCESS DEFICIENCY PRØGRAM
ACCEPT SUBSTANDARD FACILITIES (Y,N)?Y
SAME ØPTIØN FØR ALL BASES (Y,N)?N
ACCEPT SUBSTANDARD FØR CHAS (Y,N)?Y
```
(21)

2.23 The user then chooses in question 22, base by base, whether or not he wishes to see a detailed analysis of facility requirements, asset position, and excess/deficiency data. Both the Yes response and its results are shown in Table 18 for NAS Corpus Christi.

```
NAS--MERI
 DETAILED EXCESS-DEFICIENCY (Y,N)?N
```
(22)

2.24 At the end of the excess/deficiency computations, the user can decide in question 23 that he would like to change the substandard option. A negative choice is indicated in the following example.

```
DØ YØU WISH TØ MØDIFY THE SUBSTANDARD ØPTIØN (Y,N) ?N
```
(23)

A Yes response sends the user back to question 19.

2.25 Next investment costs are displayed as desired. The user has the option in question 24 to obtain for each base a printout of a detailed cost breakdown or simply the total, as shown in Table 19 for four bases. Questions 24 and 25 are included in the example. Note that when a detailed breakdown is requested the user has the option in question 25 of not meeting all deficits. In the example shown in Table 20, it was decided to make up only 80 percent of the maintenance hangar deficit and 75 percent of the family housing deficit. The new base total reflects these changes.

2.26 After all bases have been considered, the total facilities investment cost (excluding runway investment printed earlier) is displayed as follows:

```
                NAS TØTAL
YEAR 1970       59922.7
```

TABLE 18

DETAILED ANALYSIS OF FACILITY REQUIREMENTS,
ASSET POSITION, AND EXCESS/DEFICIENCY DATA

NAS--CØRP
DETAILED EXCESS-DEFICIENCY (Y,N)?Y

		REQUIRED		AVAILABLE		PØSITIØN	
CØDE	DESCRIPTIØN	AMØUNT	UNIT	STAND.	SUB-STAND.	EXCESS	DEFICIENT
1320	A/C PKNG APN	115000.	SY	0.	0.	0.	0.
1320	PER TAXIWAY	87500.	SY	0.	0.	0.	0.
11320	TØT PKNG APN	202500.	SY	427700.	0.	225200.	0.
12540	DIST PIPELIN	11.	MI	9.	0.	0.	2.
14140	A/C ØP BLDG	16956.	SF	61573.	7692.	52309.	0.
17110	ACADEMC BLDG	5145.	SF	0.	37661.	32516.	0.
21110	MAINT HANGAR	317174.	SF	0.	72210.	0.	244964.
21910	PW MAINT SHP	20455.	SF	53273.	20053.	52871.	0.
4210	GEN WAREHØUS	175282.	SF	0.	0.	0.	0.
4210	SHED SPACE	13711.	SF	0.	0.	0.	0.
44210	TØT WAREHSE	188993.	SF	414794.	518226.	744027.	0.
55010	DISPENSARY	27013.	SF	0.	21100.	0.	5913.
61010	ADMIN ØFFICE	203463.	SF	77693.	196794.	71024.	0.
71110	FAM HØUSING	2154.	UN	1383.	428.	0.	343.
0	INELIG HØUSE	399.	UN	294.	127.	22.	0.
72210	EM BARRACKS	1752.	MN	1251.	195.	0.	306.
72310	EM MESS HALL	16385.	SF	0.	33290.	16905.	0.
72415	BØQ	261.	MN	76.	100.	0.	85.
74014	EXCHANGE	16694.	SF	0.	27329.	10635.	0.
74063	SERVICE CLUB	18518.	SF	0.	23334.	4816.	0.
81230	ELEC DIST LN	433785.	LF	340069.	0.	0.	93716.
84210	WATER DIS LN	277652.	LF	251642.	0.	0.	26010.
85110	RØADS	44.	MI	44.	0.	0.	0.
85210	PARKING AREA	242499.	SY	369800.	0.	127301.	0.

TAXIWAYS & RUNWAY LIGHTING
TAXIWAY DEFICIT 12083. SY
RUNWAY LIGHTING DEFICIT: 3000. LF; 1.APPRØACH SYSTEMS
READY FUEL STØRAGE
REQUIRED: (THØUSANDS ØF GALS)
JET 16.8
AVGAS 457.1
AVAILABLE:
JET 0.
AVGAS 1300.0
HELØ 0.
DEFICIENT

NØ.	SIZE	TYPE
1.	1.	JET
1.	4.	JET
1.	12.	JET

TABLE 19

DETAILED AND TOTAL FACILITIES COST PRINTOUT

```
NAS--MERI
  FACILITIES                                          (24)
 DETAILED BREAKDØWN (Y,N)?N

        BASE TØTAL   14131.3

NAS--PENS
  FACILITIES
 DETAILED BREAKDØWN (Y,N)?Y
17110 ACADEMC BLDG     971.0
55010 DISPENSARY       255.4
61010 ADMIN ØFFICE     502.6
74063 SERVICE CLUB      10.9

        BASE TØTAL    1739.9
WILL ALL DEFICITS BE MET (Y,N)?Y                      (25)

NAS--SAUF
  FACILITIES
 DETAILED BREAKDØWN (Y,N)?N

        BASE TØTAL    4480.1
NAS--WHIT
  FACILITIES
 DETAILED BREAKDØWN (Y,N)?N

        BASE TØTAL    9180.1
```

TABLE 20

TOTAL FACILITIES COST WITH DEFICITS PARTIALLY MADE UP

```
NAS--WHIT
  FACILITIES
 DETAILED BREAKDØWN (Y,N)?Y
11320 TØT PKNG APN     274.7
14140 A/C ØP BLDG      550.9
21110 MAINT HANGAR    2935.0
44210 TØT WAREHSE      679.7
55010 DISPENSARY       341.0
61010 ADMIN ØFFICE     831.7
71110 FAM HØUSING     1245.3
72415 BØQ             1838.3
74063 SERVICE CLUB     105.3
81230 ELEC DIST LN     378.1

        BASE TØTAL    9180.1
WILL ALL DEFICITS BE MET (Y,N)?N
WRITE CATEGØRY CØDE AND PERCENT ØF DEFICIT TØ BE MADE UP AS--
NNNNN,.XX
(NEED ØNLY ENTER CASES WHERE PERCENT IS LESS THAN 1.0)
USE CATEGØRY CØDES GIVEN ABØVE.
ZERØ CATEGØRY CØDE INDICATES END ØF INPUT?21110,.8
NEXT--?71110,.75
NEXT--?0

    NEW BASE TØTAL    8281.7
```

2.27 Aircraft investment is computed next, and the user can obtain either a detailed asset position and investment cost or a summary, but not both, by answering question 26.

```
DETAILED A/C ASSET POSITION & INVESTMENT (Y,N)?N          (26)
```

The summary option is printed out in the following manner:

```
A/C INVESTMENT (CNATRA)---SUMMARY
 TØTAL A/C   TØTAL
 DEFICIENT    COST (THØUS.)
     152.        148792.
```

The result of requesting a detailed printout is shown in Table 21 , part a .

2.28 The final computations produced are O&M costs and total systems cost. Question 27 gives the user the choice of detailed cost breakdowns or a summary statement. The summary option is shown in Table 21, part b.

```
DO YOU WANT DETAILED O & M COSTS (Y,N)?N                  (27)
```

A request in response to question 27 for detailed O&M costs produces a list for each base like the one shown in Table 22 for NAS Whiting.

2.29 Finally, the total systems cost is displayed in the following manner.

```
TOTAL SYSTEMS COST =
  FACILITY INVESTMENT COSTS
  + A/C INVESTMENT
  + O & M COSTS (LESS NON ADD ITEMS)
  + CNATRA, CNABATRA, CNAVANTRA --- FIXED COSTS
---------          464461.7
```

Following this output, the user can indicate whether he wishes to return to the excess/deficiency portion of the program in question 28 (possibly with a different print option according to his answer to question 30). If No is the response, then he decides whether or not to run for another year (question 29).

```
DO YOU WISH TO RETURN TO EXCESS-DEFICIENCY PROGRAM (Y,N)?N (28)

DO YOU WISH TO RUN FOR ANOTHER YEAR (Y,N)?N               (29)
```

TABLE 21

DETAILED AIRCRAFT INVESTMENT AND ASSET POSITION AND SUMMARY O&M COST PRINTOUTS

Part a.

A/C INVESTMENT & ASSET POSITION---CNATRA

A/C	ASSET POSITION AVAILABLE	REQ'D	DEFICIT	------ COSTS (THOUS.) ---- FLYAWAY	SUPPORT	TOTAL
T34B	150.	149.	0.	0.	0.	0.
T28C	469.	388.	0.	0.	0.	0.
T-2A	114.	112.	0.	0.	0.	0.
T2BC	178.	183.	5.	2740.	411.	3151.
TF9J	399.	196.	0.	0.	0.	0.
T04J	100.	176.	76.	83809.	12571.	96381.
TS2A	179.	188.	9.	18103.	2715.	20818.
TH1L	0.	62.	62.	24732.	3710.	28441.
TH57	34.	25.	0.	0.	0.	0.

Part b.

SUMMARY O & M COSTS

NAS	MILITARY P&A	A/C FUEL TOTAL	A/C O&M TOTAL	BASE SUPPORT	TOTAL
CHAS	16459.5	6009.5	3750.9	3630.3	29850.1
COMP	28110.4	2625.3	1919.5	12514.4	45169.7
ELLY	8921.8	522.9	372.6	2251.1	12068.4
KING	17258.3	7547.1	2651.8	3797.5	31254.8
MEMI	20878.3	5808.5	1972.8	4256.2	32915.8
PENS	29650.4	2482.7	591.6	14372.0	47096.7
SAUF	15866.8	472.1	394.0	3219.1	19952.0
WHIT	23284.6	1747.0	1155.6	4628.3	30815.5

TOTAL O & M COST ALL BASES 249122.9

TABLE 22

DETAILED O&M COST PRINTOUT

```
------------------------
NAS--WHIT
11320 TØT PKNG APN          10.6
12540 DIST PIPELIN           2.4
14140 A/C ØP BLDG            4.5
17110 ACADEMC BLDG           9.5
21110 MAINT HANGAR          67.1
21910 PW MAINT SHP           6.2
44210 TØT WAREHSE            9.5
55010 DISPENSARY             7.0
61010 ADMIN ØFFICE          17.6
72210 EM BARRACKS           44.7
72310 EM MESS HALL           4.1
72415 BØQ                   60.8
74014 EXCHANGE               3.6
74063 SERVICE CLUB           2.9
81230 ELEC DIST LN          14.7
84210 WATER DIS LN          10.0
85110 RØADS                 38.8
85210 PARKING AREA           5.9
11110 RUNWAYS               10.7
*  SUBTØTAL                330.3

*  CIVILIAN WAGES         2978.7

PAY & ALLØWANCES
  PHASE ØFFICERS          5118.8
  PHASE ENLISTED          7878.4
  STUDENTS                5534.6
  NAS ØFFICERS            1064.4
  NAS ENLISTED            3688.3
   SUBTØTAL              23284.6

A/C FUEL                  1747.0
A/C Ø & M                 1155.6
BASE SUPPØRT              4628.3
   TØTAL                 30815.5


   TØTAL Ø & M CØST
     ALL BASES          249122.9
* NØN-ADD ITEMS
```

If the user decides to return to the excess/deficiency program, the computer then returns to question 19, described above. Question 30 is then asked.

```
DO YOU WISH TO RETURN TO EXCESS-DEFICIENCY PROGRAM (Y,N)?Y
TYPE LEVEL OF PRINTING DETAIL (1-5)?5                    (30)
```

A return to the LSR Generator to run for another year brings the user to question 3 and the questions and printouts following it.

EXTENDED OPERATIONS

2.30 Extended capabilities were programmed into the LSR Generator to permit the user to perform on-line modifications to the LSR data base and to measure the impact of limited training resources on the pilot training program. The extended LSR Generator is entered when the user selects an LSR level of complexity other than level 1. Level 2 complexity enables the user to determine the effect of limited aircraft, flight instructors, enlisted maintenance personnel and/or academic instructors on each training phase in the pilot training system; level 3 complexity allows him to modify the LSR data base.

2.31 The following discussion outlines the computerized logic with respect to the automated LSR Generator in the extended form. It is assumed in the following examples that the user has first selected level 3 complexity and then reruns the model at level 2 complexity. The primary reason for rerunning the model and not continuing through the LSR Generator at level 4 complexity is that, throughout the other volumes of this report, a 2510 total PTR is used in illustrative examples utilizing current NATRACOM planning factors. Consequently, the examples provided in this discussion are designed to be consistent with foregoing examples.

Level 3 Complexity — Modify Phase Data

2.32 With level 3 complexity (response to question 1 above), the user is permitted to modify the LSR data base. The automated LSR Generator follows the responses to questions 2 and 3 and then deviates from the normal operation procedure by presenting question 3a.

```
ANY DELETIONS OR ADDITIONS (Y,N)?Y                       (3a)
```

This question asks the user whether he wants to add or delete training phases to or from the current pilot training program (LSR data base). Following a No response, question 3 is immediately presented. Following a Yes response, question 3b is printed.

```
ANY DELETIONS (Y,N)?Y
```
(3b)

If one or more of the current training phases are to be removed from the data base, a Yes response is given. If a No response is given, question 3d is printed.

2.33 The user is then asked question 3c.

```
ENTER PHASE NUMBERS (XX,XX, . .)
TWØ DIGITS ARE REQUIRED FØR EACH PHASE?07,08
```
(3c)

Assuming that the two advanced jet phases, Adv Jet-TA and Adv Jet-TF, are to be dropped in the future, possibly to be replaced later by another phase, the above response would be given to question 3c. Table 23 shows the deletion of the two training phases. Note that in Table 23 all training phase numbers have been revised to preserve sequential training phase numbers.[1/]

TABLE 23

DELETED TRAINING PHASES AND RENUMBERED PHASES

```
DELETE PHASE  8 ADV JET-TA
DELETE PHASE  7 ADV JET-TF

TRAINING PHASES
NØ. PHASE NAME
 1  PRIMARY
 2  AØC SCHØØL
 3  FLIGHT SYS.
 4  BASIC JET-A
 5  BASIC JET-B
 6  B-JET G/CØ
 7  BASIC PRØP
 8  B-PRØP CØ
 9  ADV PRØP
10  PRE HELØ
11  HELØ PRIM
12  HELØ ADV
```

2.34 Question 3d immediately follows.

```
ADD A NEW PHASE (Y,N)?Y
```
(3d)

If the user does not wish to add one or more new training phases to the LSR data base, question 3f follows. A Yes response to question 3d requires the user to enter all data associated with the training phase in question. This is accomplished through a series of responses given in dialogue 3e. See Table 24 for a complete description of dialogue 3e.

[1/] Renumbering is done to minimize computer storage requirements, thus enabling the user to exercise more program options within a limited amount of computer memory.

TABLE 24

DATA FIELDS REQUIRED TO DEFINE A TRAINING PHASE[1]

Data Field-(Element)	Description
1	Name of training phase - 12 alphameric characters
2	Attrition point - the average percentage of the training phase a student attrite is expected to complete
3	Phase duration in weeks
4	Flight and academic instruction tour of duty length in months
5	Number of aircraft instruction types
6	Number of academic instruction types
7-J[2]	Aircraft name - 4 alphameric characters
8-J	Fuel type - 4 alphameric characters
9-J	Percent annual flyable weather
10-J	Aircraft hourly fuel consumption in gallons
11-J	Hours per day an aircraft may be utilized for flight instruction
12-J	Hours per day a flight instructor may be utilized for flight instruction
13-J	Average aircraft flight hours for a successfully completed student
14-J	Average flight instructor hours for a successfully completed student
15-J	Flight instruction training period in months
16-J	Ratio of landing support officers to average student load
17-J	Ratio of direct maintenance personnel to aircraft

[1] Data fields 7-17 are not entered if no flight instruction exists, i.e., if data field 5 = 0.

[2] The particular element, J, is sequentially incremented from 1 to the number of aircraft types that exist for the training phase (the value of data field 5).

TABLE 24 (Cont)

Data Field-(Element)	Description
18-I[3/,4/]	Name of academic instruction - 4 alphameric characters
19-I	Number of academic instruction hours per student
20-I	Number of student hours an academic instruction can be utilized annually
21-I	Academic instruction training period

[3/] Data fields 18-21 are not entered if no academic instruction exists, i.e., if data field 6 = 0.

[4/] I is sequentially incremented from 1 to the number of academic instruction types that exist for the training phase (the value of data field 6).

```
ENTER NAME OF PHASE 13 (AAAAAAAAAAAA)?NEW PHASE
ENTER DATA FIELD  2 (XXXX.XX)?.5
ENTER DATA FIELD  3 (XXXX.XX)?10
ENTER DATA FIELD  4 (XXXX.XX)?24
ENTER DATA FIELD  5 (X)?1
ENTER DATA FIELD  6 (X)?0
ENTER DATA FIELD  7-1 (AAAA)?T34B
ENTER DATA FIELD  8-1 (AAAA)?AGAS
ENTER DATA FIELD  9-1 (XXX.XXXX)?.8
ENTER DATA FIELD 10-1 (XXX.XXXX)?50.5
ENTER DATA FIELD 11-1 (XXX.XXXX)?2.81
ENTER DATA FIELD 12-1 (XXX.XXXX)?2.25
ENTER DATA FIELD 13-1 (XXX.XXXX)?55
ENTER DATA FIELD 14-1 (XXX.XXXX)?25
ENTER DATA FIELD 15-1 (XXX.XXXX)?2
ENTER DATA FIELD 16-1 (XXX.XXXX)?15
ENTER DATA FIELD 17-1 (XXX.XXXX)?5.47
```
(3e)

In the user responses shown, only 17 data values are entered, as opposed to the 21 presented in Table 24, because academic instruction, data field 6, is not included in a training phase. When a training phase has been completely defined, the data in Table 25 are printed for user reference.

2.35 Question 3d and dialogue 3e are repeated until the user no longer wishes to add new phases, i.e., until he answers No to question 3d. Following a No response, the data in Table 26 is printed to provide a permanent list of the training phases contained in the modified LSR data base. Question 3f is then printed.

```
ANY LISTS OR MODIFICATIONS (Y,N)?Y
```
(3f)

If the user wishes to have a complete list of the current data in any training phase or desires to modify the data in any training phase, he gives a Yes response. Question 3l follows a No response.

2.36 The user must next respond to question 3g.

```
ANY DATA LISTS (Y,N)?Y
```
(3g)

This question enables the user to obtain a data list of one or more training phases. A No response causes question 3i to be printed. When a data list is asked for, question 3h follows.

```
ENTER PHASE NUMBERS (XX,XX, . .)
TWO DIGITS ARE REQUIRED FOR EACH PHASE?01,13
```
(3h)

TABLE 25

DATA LIST FOR NEW TRAINING PHASE

```
DATA LIST FØR TRAINING PHASE 13
01 PHASE NAME NEW PHASE
02 ATTRITIØN PØINT 0.5000
03 PHASE DURATIØN 10.00 WEEKS
04 TØUR ØF DUTY 24.00 MØNTHS
05 AIRCRAFT TYPES    1
06 INSTRUCTIØN TYPES 0
07 AIRCRAFT TYPES          T34B
08 FUEL TYPE               AGAS
09 FLYABLE WEATHER         0.800
10 FUEL CØNSUMPTIØN       50.50
11 A/C UTILIZATIØN         2.81
12 INSTRUCTØR UTIL.        2.25
13 FLIGHT HØURS           55.00
14 FLIGHT INST. HØURS     25.00
15 INST. TR. PERIØD        2.00
16 LSØ RATIØ              15.00
17 MAINTAINENCE MEN        5.47
ADD A NEW PHASE (Y,N)?N
```

TABLE 26

LIST OF TRAINING PHASES IN LSR DATA BASE
AFTER NEW PHASES HAVE BEEN ADDED

```
TRAINING PHASES
NØ. PHASE NAME
  1  PRIMARY
  2  AØC SCHØØL
  3  FLIGHT SYS.
  4  BASIC JET-A
  5  BASIC JET-B
  6  B-JET G/CØ
  7  BASIC PRØP
  8  B-PRØP CØ
  9  ADV PRØP
 10  PRE HELØ
 11  HELØ PRIM
 12  HELØ ADV
 13  NEW PHASE
```

The user must now enter the phase numbers of the training phases for which he desires data lists. The above response produces the data appearing in Table 27. Note that the data list for the training phase, New Phase, in Table 27 is identical to that shown in Table 25, the data entered by the user while developing a new training phase.

2.37 The user is next asked to respond to question 3i.

```
ANY MODIFICATIONS (Y,N)?Y                                    (3i)
```

A No response recycles the automated LSR Generator to question 3f. A Yes response indicates that the user desires to modify particular data elements within the LSR data base. Question 3j is printed next.

```
ENTER PHASE, FIELD AND ELEMENT (XX,XX,X)
PHASE = 00 IMPLIES NO FURTHER MODIFICATIONS
NOTE TWO DIGIT FIELDS MUST CONTAIN TWO DIGITS?13,01          (3j)
```

The user responds to question 3j by entering the number of the training phase, 13, and the data field and element to be modified, 01 (see Table 24 for a description of data fields and elements). In this example, the name of training phase 13 is to be changed.

2.38 Question 3k permits data modification.

```
ENTER NAME OF PHASE 13 (AAAAAAAAAAAA)?CHANGE NAME
01 PHASE NAME CHANGE NAME                                    (3k)
```

After the particular datum point has been modified, a list of the revised element is displayed. The user must again respond to questions 3j and 3k.

```
NEXT?13,07,1                                                 (3j)
```

```
ENTER DATA FIELD  7-1 (AAAA)?T28C
07 AIRCRAFT TYPES        T28C                                (3k)
```

The sample response above changes the name of phase 13 aircraft and the following response modifies the number of enlisted maintenance personnel required to support an aircraft.

TABLE 27

DATA LISTS OF TRAINING PHASES

```
DATA LIST FØR TRAINING PHASE  1
01 PHASE NAME PRIMARY
02 ATTRITION PØINT 0.5000
03 PHASE DURATION  6.00 WEEKS
04 TØUR ØF DUTY 24.00 MØNTHS
05 AIRCRAFT TYPES    1
06 INSTRUCTION TYPES 0
07 AIRCRAFT TYPES          T34B
08 FUEL TYPE               AGAS
09 FLYABLE WEATHER         0.782
10 FUEL CØNSUMPTIØN       12.60
11 A/C UTILIZATIØN         4.20
12 INSTRUCTØR UTIL.        3.01
13 FLIGHT HØURS           32.60
14 FLIGHT INST. HØURS     29.20
15 INST. TR. PERIØD        2.00
16 LSØ RATIØ               0.
17 MAINTAINENCE MEN        2.55

DATA LIST FØR TRAINING PHASE 13
01 PHASE NAME NEW PHASE
02 ATTRITION PØINT 0.5000
03 PHASE DURATIØN 10.00 WEEKS
04 TØUR ØF DUTY 24.00 MØNTHS
05 AIRCRAFT TYPES    1
06 INSTRUCTIØN TYPES 0
07 AIRCRAFT TYPES          T34B
08 FUEL TYPE               AGAS
09 FLYABLE WEATHER         0.800
10 FUEL CØNSUMPTIØN       50.50
11 A/C UTILIZATIØN         2.81
12 INSTRUCTØR UTIL.        2.25
13 FLIGHT HØURS           55.00
14 FLIGHT INST. HØURS     25.00
15 INST. TR. PERIØD        2.00
16 LSØ RATIØ              15.00
17 MAINTAINENCE MEN        5.47
```

```
NEXT?13,17,1                                                    (3j)

ENTER DATA FIELD 17-1 (XXX.XXXX)?6.42                           (3k)
17 MAINTAINENCE MEN      6.42
```

Note that in both examples a data element is required to define the aircraft being considered. The process continues until the response, 00, is given to the question "NEXT?" When 00 is entered as a phase number, the automated system returns to question 3f, and the process continues.

2.39 For purposes of clarity,, the following responses were given to questions 3f, 3g, and 3h to produce the printout contained in Table 28. Note that this table incorporates the modifications to training phase 13 presented above in the data list in Table 25.

```
ANY LISTS OR MODIFICATIONS (Y,N)?Y                              (3f)

ANY DATA LISTS (Y,N)?Y                                          (3g)

ENTER PHASE NUMBERS (XX,XX, . .)
TWO DIGITS ARE REQUIRED FOR EACH PHASE?13                       (3h)
```

2.40 When a No response is given to question 3f, question 3l is printed.

```
SAVE MODIFIED DATA BASE (Y,N)?Y                                 (3l)
```

This question, when answered Yes, generates the modified LSR data base on data file SAVBCS for future user reference. With a No response or when the data file has been generated, the automated LSR Generator returns to question 4 of its normal operation (see Normal Operating Procedures above).

2.41 After question 4 has been answered,question 4a is printed.

```
PRINT ALL PIPELINES (Y,N)?Y                                     (4)

SAVE MODIFIED PIPELINES (Y,N)?Y                                 (4a)
```

This question asks the user whether the subsequent modifications to the training pipeline data should be preserved on a data file. With a Yes response, data file PIPES is generated containing the updated pipeline data. The data in Table 29 are developed after the response to question 4.

TABLE 28

MODIFICATIONS TO A TRAINING PHASE

```
DATA LIST FOR TRAINING PHASE 13
01 PHASE NAME CHANGE NAME
02 ATTRITIØN PØINT 0.5000
03 PHASE DURATIØN 10.00 WEEKS
04 TØUR ØF DUTY 24.00 MØNTHS
05 AIRCRAFT TYPES     1
06 INSTRUCTIØN TYPES 0
07 AIRCRAFT TYPES          T28C
08 FUEL TYPE               AGAS
09 FLYABLE WEATHER         0.800
10 FUEL CØNSUMPTIØN       50.50
11 A/C UTILIZATIØN         2.81
12 INSTRUCTØR UTIL.        2.25
13 FLIGHT HØURS           55.00
14 FLIGHT INST. HØURS     25.00
15 INST. TR. PERIØD        2.00
16 LSØ RATIØ              15.00
17 MAINTAINENCE MEN        6.42
```

TABLE 29

TRAINING PIPELINE INFORMATION FOR NAVY OFFICERS

TRAINING PIPELINE FØR NAVY ØFFICER

PHASE NØ.	PHASE NAME	ATTRITIØN RATE	FØLLØWING PHASES
1	PRIMARY	0.0900	3
3	FLIGHT SYS.	0.0270	4, 7
4	BASIC JET-A	0.0500	5
5	BASIC JET-B	0.0200	6
6	B-JET G/CQ	0.0200	
7	BASIC PRØP	0.1400	8
8	B-PRØP CQ	0.0040	9,10
9	ADV PRØP	0.0080	
10	PRE HELØ	0.0050	11
11	HELØ PRIM	0.0020	12
12	HELØ ADV	0.0020	

2.42 Note that Table 29 differs from Table 3 above. The training phases, Advanced Jet-TA and Advanced Jet-TF, are deleted in Table 29 and the remaining phases are renumbered to make the data consistent with Table 26.

2.43 When a list of the training phases in a particular training pipeline is printed, according to the user's affirmative response to question 4, question 4b is printed.

```
PIPELINE NAVY OFFICER
ANY DELETIØNS, ADDITIØNS, LISTS ØR MØDIFICATIØNS (Y,N)?Y
```

(4b)

This question asks the user whether any modification should occur in the training pipeline currently stored in the computer memory. With a No response, dialogue 5 is conducted, and the user enters the appropriate training phase PTRs (see question 5 above). The next training pipeline is entered and question 4b is repeated.

2.44 Question 4c follows a Yes response to question 4b.

```
DELETE ANY PHASES (Y,N)?Y
```

(4c)

When the user wishes to delete a training phase from the training pipeline, he gives a Yes response; otherwise, question 4e follows. To delete a phase from the pipeline, the user need only enter the phase number, as shown in question 4d.

```
ENTER PHASE NUMBERS (XX)
ENTER 0, FØR NØ FURTHER DELETIØNS?6
```

(4d)

This response will cause Basic Jet G/CQ to be deleted from the training pipeline. The process of deletion continues until the user terminates it by giving the following response to question 4d.

```
NEXT?0
```

(4d)

When this response is given, question 4e is printed.

```
ADD A NEW PHASE (Y,N)?Y
```

(4e)

If the user does not wish to add a training phase to the pipeline, he types a No, and question 4h follows. Otherwise, question 4f is printed, followed by 4g after 4f receives a response.

```
ENTER NUMBER OF NEW PHASE (XX)?13                                    (4f)

ENTER FOLLOWING PHASES AND ATTRITION RATE                            (4g)
(XX,XX,XX,.XXX) ALL DATA FIELDS MUST BE ENTERED?0,0,0,.01
```

The above response to 4f indicates that training phase 13 is to be included in the pipeline. In addition, the response to question 4g instructs the computer that phase 13 is to be a terminal pipeline phase (the "0,0,0" response means that no phases follow) with an attrition rate of 1 percent (.01).

2.45 All the desired new training phases are added to the pipeline, and then a No response is given to question 4c. Question 4h follows.

```
LIST PIPELINE DATA (Y,N)?Y                                           (4h)
```

A No response will cause question 4i to be printed immediately. Otherwise, a list of pipeline data will be printed first (see Table 30). Note that the table includes the training phase, Change Name, which was added following question 4f.

2.46 Training phase data can be modified in the response to question 4i.

```
MODIFY A PHASE (Y,N)?Y                                               (4i)
```

Following a No response to question 4i, the automated LSR Generator returns to question 4b and continues. After a Yes response, question 4j is printed.

```
ENTER PHASE NUMBER AND SWITCH (XX,X)
SWITCH = 0 - MODIFY FOLLOWING PHASES
       = 1 - MODIFY ATTRITION RATE
PHASE  = 0,0 IMPLIES NO FURTHER MODIFICATIONS?13,1                   (4j)
```

This response directs the automated system to revise the attrition rate of phase 13. Question 4k follows.

```
ENTER ATTRITION RATE (.XXX)?.08                                      (4k)
```

TABLE 30

TRAINING PIPELINE WHEN NEW PHASE IS ADDED

TRAINING PIPELINE FØR NAVY ØFFICER

PHASE NØ.	PHASE NAME	ATTRITIØN RATE	FØLLØWING PHASES
1	PRIMARY	0.0900	3
3	FLIGHT SYS.	0.0270	4, 7
4	BASIC JET-A	0.0500	5
5	BASIC JET-B	0.0200	
7	BASIC PRØP	0.1400	8
8	B-PRØP CQ	0.0040	9,10
9	ADV PRØP	0.0080	
10	PRE HELØ	0.0050	11
11	HELØ PRIM	0.0020	12
12	HELØ ADV	0.0020	
13	CHANGE NAME	0.0100	

The attrition rate of 8 percent is entered. Question 4j is again partially entered, with the user making the appropriate responses.

```
NEXT?05,0                                                    (4j)

ENTER FOLLOWING PHASES (XX,XX,XX)?13,0,0                     (4k)
                    •
NEXT?0,0                                                     (4j)
```

When the "0,0" response is given to question 4j, the program returns to question 4b and recycles.

2.47 As an example of how the foregoing modifications affects the Navy Officer training pipeline, the following responses were given to questions 4b, 4c, 4e, and 4h.

```
                                                             (4b)
PIPELINE NAVY OFFICER
ANY DELETIONS, ADDITIONS, LISTS OR MODIFICATIONS (Y,N)?Y      (4c)

DELETE ANY PHASES (Y,N)?N                                    (4e)

ADD A NEW PHASE (Y,N)?N                                      (4h)
LIST PIPELINE DATA (Y,N)?Y
```

These responses produced the information shown in Table 31. Note that the phases following training phase 5 and the attrition rate of phase 13 have been modified according to user specifications.

2.48 When all training pipelines have been modified and their respective phase PTRs computed, question 41 is printed.

```
ADD A NEW PIPELINE (Y,N)?Y                                   (41)
```

Following a No response, the LSR summary data are printed (see Table 10 above). If he responds Yes, the user must enter the name of the new training pipeline in response to question 4m.

```
ENTER NAME ØF PIPELINE (AAAAAAAAAAA)?NEW PIPELINE            (4m)
```

TABLE 31

MODIFIED TRAINING PIPELINE

TRAINING PIPELINE FOR NAVY OFFICER

PHASE NO.	PHASE NAME	ATTRITION RATE	FOLLOWING PHASES
1	PRIMARY	0.0900	3
3	FLIGHT SYS.	0.0270	4, 7
4	BASIC JET-A	0.0500	5
5	BASIC JET-B	0.0200	13
7	BASIC PROP	0.1400	8
8	B-PROP CQ	0.0040	9,10
9	ADV PROP	0.0080	
10	PRE HELO	0.0050	11
11	HELO PRIM	0.0020	12
12	HELO ADV	0.0020	
13	CHANGE NAME	0.0800	

The system recycles to question 4f and continues with the training pipeline modification process.

Level of Complexity of 2 — Constrain LSR Output

2.49 With level 2 complexity, the user may measure the impact of limited training resources on each phase in the pilot training program. When this level of complexity is selected, the automated LSR Generator processes all normal dialogues through question 6 (see Normal Operating Procedures above). Instruction 6a is then printed.

```
ANY LSR ØUTPUT CØNSTRAINTS (Y,N)?Y
```

(6a)

Receiving a No response to question 6a, the LSR Generator proceeds with question 7 above. A Yes response means the user wishes to determine the impact of scarce training resources on a training phase. Question 6b is then printed.

```
WHICH PHASE (XX)?10
```

(6b)

In response to question 6b, the user selects the training phase to be constrained. He enters the phase number and a detailed LSR output for the training phase is then printed (see Table 32).

2.50 Question 6c is then printed.

```
SELECT APRØPIATE FIELD AND ELEMENT (X,X)
 1 AIRCRAFT
 2 FLIGHT INSTRUCTØRS
 3 ENLISTED SUPPØRT
 4 ACADEMIC INSTRUCTØRS?1,1
```

(6c)

The appropriate field is selected by specifying one of the four items listed in question 6c. The element number is the item in the data field to be constrained. In the above response, the number of aircraft in phase 10 are to be constrained. Element number 1 refers to the first aircraft type printed in the detailed LSR printout. [2/] After the field and element number have been entered, question 6d is printed.

```
ENTER CØNSTRAINING VALUE (XXXX.XXX)?28
```

(6d)

2/ Note that Basic Prop CQ contains only one aircraft type, the T-28C. If another aircraft type had existed in the phase, i.e., the T-34B, the user could constrain either aircraft type by selecting an element of 1 or 2.

TABLE 32

DETAILED LSR OUTPUT BASIC PROP CQ
(UNCONSTRAINED OUTPUT)

NAME ØF PHASE B-PRØP CQ	
STUDENT INPUT 1467.	
STUDENT ØUTPUT 1460.	
AVERAGE STUDENT LØAD 117.	
ADMINISTRATIVE ØFFICERS 12.	
TØTAL ØFFICERS 45.	
TØTAL ENLISTED 238.	
AIRCRAFT TYPES	T28C
NUMBER REQUIRED	36.
FUEL TYPES	AGAS
GALLØNS CØNSUMED	0.111E+07
FLIGHT INSTRUCTØRS	20.
UNDER TRAINING	2.
LSØ REQUIREMENTS	12.
ENLISTED SUPPØRT	238.

The user is now required to enter the available amount of that particular training resource. The automated LSR Generator then computes the maximum phase PTR which could be obtained if the resource constraint specified by the user were the only constraint in effect. This PTR, as well as the computer PTR, are printed in question 6e.

```
ØLD STUDENT ØUTPUT 1460.
CØNSTRAINED ØUTPUT 1130.
ADDITIØNAL CØNSTRAINTS (Y,N)?Y
```
(6e)

Following a No response, the automated program prints instruction 6f. The following responses to questions 6c, 6d, and 6e show how the user may constrain flight instructors and enlisted support.

```
SELECT APPRØPIATE FIELD AND ELEMENT (X,X)?2,1
```
(6c)

```
ENTER CØNSTRAINING VALUE (XXXX.XXX)?19
```
(6d)

```
ØLD STUDENT ØUTPUT 1460.
CØNSTRAINED ØUTPUT 1270.
ADDITIØNAL CØNSTRAINTS (Y,N)?Y
```
(6e)

```
SELECT APPRØPIATE FIELD AND ELEMENT (X,X)?3,1
```
(6c)

```
ENTER CØNSTRAINING VALUE (XXXX.XXX)?200
```
(6d)

```
ØLD STUDENT ØUTPUT 1460.
CØNSTRAINED ØUTPUT 1229.
ADDITIØNAL CØNSTRAINTS (Y,N)?N
```
(6e)

2.51 Question 6f is printed when the user indicates that no further constraints will be observed.

```
NEW LSR SUMMARY FØR B-PRØP CQ    (Y,N)?Y
```
(6f)

A Yes response instructs the automated system to print a detailed LSR output which does not violate the most rigid constraint on a training resource (see

Table 33). Note that three constraints are imposed on Basic Prop CQ, i.e., limitations on aircraft, flight instructors, and enlisted personnel. The detailed constrained output in Table 33 does not violate any of these resource limitations.

2.52 When the detailed LSR output has been printed or when a No response has been given to question 6f, question 6g is printed.

ANØTHER PHASE CØNSTRAINED (Y,N)?N (6g)

A Yes response instructs the automated system to return to question 6b and continue. Following a No response, question 6h is printed.

REVISE LSR TØ INCLUDE CØNSTRAINTS (Y,N)?N (6h)

A No response to question 6h returns the automated LSR Generator to normal operations, and the computer prints normal operations question 7. A Yes response indicates that all training phase PTRs must be revised so that limited training resources are not exceeded. The automated LSR Generator returns to question 4 to permit the user to revise the pilot training rates for all training pipelines.

TABLE 33

DETAILED LSR OUTPUT BASIC PROP CQ
(WITH TRAINING RESOURCE LIMITATIONS)

NAME ØF PHASE B-PRØP CQ	
STUDENT INPUT 1135.	
STUDENT ØUTPUT 1130.	
AVERAGE STUDENT LØAD	91.
ADMINISTRATIVE ØFFICERS	9.
TØTAL ØFFICERS	35.
TØTAL ENLISTED	184.
AIRCRAFT TYPES	T28C
NUMBER REQUIRED	28.
FUEL TYPES	AGAS
GALLØNS CØNSUMED	0.856E+06
FLIGHT INSTRUCTØRS	16.
UNDER TRAINING	1.
LSØ REQUIREMENTS	9.
ENLISTED SUPPØRT	184.

III. DIAGNOSTIC MESSAGES

3.1 The automated IFRS system is designed and programmed to provide the user with substantial on-line flexibility through numerous questions and operating instructions presented at critical points during system operation. For example, when the training phase resource requirements have been displayed (LSR summary), the user may wish to measure their impact on a particular training phase's PTR by limiting or constraining certain resources. In another case, after finding the required facility investments for an NAS, accepting only standard facilities, the user may wish to compare this investment with one for which substandard facilities are also acceptable.

3.2 When a system relies repeatedly on the man-machine interface (conversational mode), the likelihood of typographical, transmission, and other types of errors increases greatly. To partially alleviate the erroneous model outputs which result from interface errors, the automated IFRS system checks every response supplied by the user. Two types of checks are conducted: response data are absolutely tested for validity, i.e., should a Yes or No response be required and any other character be recognized, an absolute error exists; and response data are relatively checked for validity, i.e., should the user enter a tour of duty length of 60 months, the system detects that this tour length is longer than normal.

3.3 Table 34 presents all diagnostic messages (error conditions) which can arise during the operation of the automated IFRS system. Along with each diagnostic message is a brief description defining the error condition and the required user action. It should be noted that most diagnostic messages are self-explanatory.

TABLE 34

IFRS DIAGNOSTIC MESSAGES

Diagnostic Message	Description	Required User Action
INVALID REPLY–REPEAT INVALID DATA—REPEAT INVALID DATA—TRY AGAIN BAD REPLY—RETYPE INVALID REPLY—RETYPE BAD FORMAT—TRY AGAIN	The data value entered in response to the previous question is not correct or in bad format	Reply again to previous question
NO PHASES IN PIPELINE	Either the LSR data base or the current training pipeline contain no training phases	New training phases must be added to LSR data base
25 PHASES IN PIPELINE	The LSR data base contains the maximum number of training phases. Phase deletions must occur before a new phase is added	Information only; program continues
PREVIOUS OPTION NOT PROCESSED	User did not enter any phase numbers to exercise the previously specified option	Information only; program continues
COMMA MISSING REPEAT	Data entered in bad format	Respond again to previous question
MAX. FOR FIELD IS 3—FIELD SET TO 0	A maximum of three aircraft or academic instruction types may exist for each training phase. A value greater than 3 was detected. The automated system assumes the correct value to be 0	Information only; program continues
DATA POINT XXXX.XXXX EXCEEDS RANGE OF 0.0 - XXXX. ACCEPT (Y,N)	The data value for the previously printed data field exceeds the expected range for this data point	Accept data value or enter new value

TABLE 34 (Cont)

Diagnostic Message	Description	Required User Action
MAXIMUM PHASES IN PIPELINE	The current training pipeline contains all training phases. No new phases may be added	Information only; program continues
PHASE IN PIPELINE	The training phase the user is attempting to enter currently exists in the training pipeline	Information only; program continues
PIPELINE LOGIC ERROR— ALL PHASES DELETED ALL PHASES DELETED	A logic error exists in the current training pipeline	New training phases must be added to training pipeline
XX IS AN INVALID PHASE	The training phase number exceeds the number of phases in the data base	Phase deleted; program continues
PHASE NOT IN PIPELINE	The previous phase number entered does not exist in the training pipeline or in the LSR data base	Reply again to the previous question
INSUFFICIENT DATA TO COMPUTE STUDENT STATISTICS RE-ENTER STUDENT ASSIGNMENTS OR RERUN	The PTRs entered are not sufficient to compute the PTR for all training phases	Re-enter all PTR data
PHASE CONTAINS NO ACTIVITY	The training phase selected for LSR output constraints is not used for pilot training	Program recycles
RUNWAY PHASE NAME AAA DOES NOT MATCH PHASE NAME AAA. REVISE AND RERUN RUNWAY AIRCRAFT TYPES OF XX DOES NOT MATCH PHASE TYPES OF XX FOR PHASE AAA. REVISE AND RERUN FOR PHASE AAA AIRCRAFT NAMES DO NOT MATCH PHASE AIRCRAFT NAME AAA,AAA. REVISE AND RERUN	Inconsistency exists between runway data base and LSR data base	Program terminated

TABLE 34 (Cont)

Diagnostic Message	Description	Required User Action
RUNWAY DATA FILE IS INCOMPLETE—UPDATE AND RERUN	No aircraft types exist for a training phase in the Runway Data File	Program terminated
MAX NO. OF RUNWAY TYPES EXCEEDED PROGRAM ABORT RUNWAY REQUIREMENTS EXCEED AVAILABLE TABLE SPACE PROGRAM ABORT	More than the maximum of 10 runway types are required at a training base	Program terminated
PERCENT MUST BE LESS THAN 1.0 — TRY AGAIN THE VALUE XX GIVEN FOR PERCENT CANNOT EXCEED 1	Value entered must be less than 1.0	Reply again with correct value
FUEL IN PHASE XX IS OF UNKNOWN TYPE	The fuel name in the printed training phase does not begin with J, H, or A. Fuel requirements are assumed to be 0	Program continues
INCORRECT BASE CODE—TRY AGAIN	The name of the base previously entered is invalid	Program recycles
PHASE XX HAS BEEN OVER-ASSIGNED REALLOCATE THIS PHASE	More than 100 percent of the training phase printed has been allocated to the training base(s)	Allocation assumed to be zero. User must reallocate phase
PHASE XX HAS NOT BEEN ASSIGNED OR IS ONLY PARTLY ASSIGNED	Only partial assignment of the printed training phase has been made	Assign remainder of training phase
UNRECOGNIZED A/C TYPE IN RUNWAY COMPUTATIONS AAA	Aircraft does not appear in aircraft data base	Program terminated

IV. FILE UPDATE PROCEDURES

4.1 The automated IFRS system requires the use of eight data files during a normal computer run. The files have been assigned the following names and incorporate the following information.

- BASCAS—Training phase data used by LSR Generator
- PIPE—Pipeline data for each training pipeline
- RUNDAT—Runway data for each training phase
- RPIFI*—Inventory of facilities for all bases
- ACDAT*—Aircraft data
- BASED*—Base dependent parameters
- INVCO*—Cost data for facilities
- TABLE*—Various tables for computing facility requirements.

These data files were created in a manner which provides the user with maximum ease and flexibility in updating. To update most data files, the user selects the line number of the appropriate data element(s) to be updated, enters the line number and data element(s), and replaces the data file.

4.2 The following paragraphs describe each data file and the procedures required to update it. When the user may update a data file in more than one way, i.e., on-line as well as off-line, both procedures are presented. In off-line data file updates, it should be noted that "free format" is to be assumed unless otherwise specified. Thus, data entries need only be separated by a comma or a space, rather than follow strict FORTRAN format.[1/]

1/ See General Electric Company, FORTRAN Language, Preliminary Reference Manual, Mark II Time-Sharing Service, July 1969, for a detailed discussion of free format.

DATA FILE BASCAS

4.3 Data File BASCAS contains all data associated with each phase of pilot training. This data file may be updated in the course of a computer run by selecting an LSR of level 3 complexity (see Extended Operations above). After all modifications have been made, the user responds Yes to question 31 above. When the computer run has been completed, Data File SAVBCS is renamed BASCAS and the new file replaced. When a new phase is added, Data File RUNDAT must include the new phase.

Off-Line Update of BASCAS

4.4 Four types of data must be present in Data File BASCAS: alphabetic constants, expected maximum values for training phase data points, the number of training phases in the data base, and training phase description data.

4.5 Alphabetic Constants. Alphabetic constants are particular characters used for comparative purposes with user responses and for blanking print fields. Table 35 describes these characters and their associated formats.

TABLE 35

DATA FILE BASCAS ALPHABETIC CONSTANTS

Character	Format	Description
1-4	I4	Line number (must be lowest four-digit number in data file)
6	A1	N - character "N"
7	A1	Y - character "Y"
8	A1	, - character ","
9-12	A4	ØØØØ - four blank spaces

4.6 Expected Maximum Values for Training Phase Data. These data values are the respective maximum values a user expects for the training phase data. If any training phase data point exceeds its respective maximum, a diagnostic message will be produced. Note that these maximum values are independent of training phases. A description of the data characters and their formats appears in Table 36.

TABLE 36

DATA FILE BASCAS MAXIMUM VALUES FOR TRAINING PHASE DATA

Character	Format	Description
1-4	I4	Line number (larger than previous line number)*
6-	FREE**	BMAX(1), Maximum attrition point
Next	FREE	BMAX(2), Maximum phase duration
Next	FREE	BMAX(3), Maximum tour of duty for academic and flight instructor in months
Next	FREE	BMAX(4), Maximum percentage flyable weather
1-4	I4	Next line number
6-	FREE	BMAX(5), Maximum hourly fuel consumption rate
Next	FREE	BMAX(6), Maximum hours per day an aircraft may be utilized
Next	FREE	BMAX(7), Maximum hours per day a flight instructor may be utilized
Next	FREE	BMAX(8), Maximum number of flight hours to train a student
1-4	I4	Next line number
6-	FREE	BMAX(9), Maximum number of flight instructor hours to train a student
Next	FREE	BMAX(10), Maximum number of months a flight instructor will be trained before he is assigned students

* Note that line number are restricted only in that they must be in ascending order.

** FREE format requires only that data fields must be separated by a comma or a space. Zero values must be typed as 0. In the above example. the line number is separated from the first data field by a space. A comma would have given identical results.

TABLE 36 (Cont)

Character	Format	Description
Next	FREE	BMAX(11), Maximum ratio of students to landing support officers
Next	FREE	BMAX(12), Maximum direct enlisted maintenance personnel per aircraft
1-4	I4	Next line number
6-	FREE	BMAX(13), Maximum number of academic instruction hours required to train a student
Next	FREE	BMAX(14), Maximum annual student hours an academic instructor can instruct
Next	FREE	BMAX(15), Maximum number of months an academic instructor will be trained before he is assigned students

4.7 Number of Training Phase. The training phase numbers kept in Data File BASCAS are described in Table 37.

TABLE 37

DATA FILE BASCAS TRAINING PHASE NUMBER

Character	Format	Description
1-4	I4	Next line number
6-	FREE	Number of training phases to follow in this data file

4.8 Training Phase Description Data. Training phase description data are entered on a phase by phase basis, i.e., a complete description for the first phase is entered before data associated with the second phase are begun. Note in the description of these data in Table 38 that 15 lines of data are required to define a single training phase. All training phase description data must be entered for each training phase. Table 39 provides a list of the data currently contained in BASCAS.

DATA FILE PIPE

4.9 Data file PIPE contains the sequence of training phases and the attrition rates associated with each training pipeline. This data file may be updated in the course of a computer run by selecting an LSR level 3 complexity (see Extended Operations above). The user must also request that the modified pipeline data be saved (see instruction 4a above). When the computer run is complete, data file PIPES is renamed PIPE and replaced.

Off-Line Update of PIPE

4.10 Three types of data exist in this data file: the name of the training pipeline, phase sequences and attrition rates, and end of file data.

TABLE 38

DATA FILE BASCAS TRAINING PHASE DESCRIPTIONS

Character	Format	Description
1-4	I4	Next line number
6-17	3A4	Name of training phase
18-21	A4	Name of first aircraft type
22-25	A4	Name of second aircraft type
26-29	A4	Name of third aircraft type
30-33	A4	Fuel consumed by first aircraft type
34-37	A4	Fuel consumed by second aircraft type
38-41	A4	Fuel consumed by third aircraft type
42-45	A4	Name of first type of academic instruction
46-49	A4	Name of second type of academic instruction
50-53	A4	Name of third type of academic instruction
1-4	I4	Next line number
6-	FREE	Number of aircraft types in training phase
Next	FREE	Number of academic instruction types in phase
1-4	I4	Next line number
6-	FREE	Average attrition point for a student attrite
Next	FREE	Phase duration in weeks
Next	FREE	Tour of duty for academic and flight instructors
1-4*	I4	Next line number

* Note that for the remaining data fields, three values must be entered. Should less than the three values be required for phase definitions, enter zeros for the nonapplicable items.

TABLE 38 (Cont)

Character	Format	Description
6-	FREE	Percent flyable weather for each aircraft type (three values must be entered)
1-4	I4	Next line number
6-	FREE	Fuel consumption rate for each aircraft type in gallons per hour
1-4	I4	Next line number
6-	FREE	Hours per day each aircraft may be utilized
1-4	I4	Next line number
6-	FREE	Hours per day a flight instructor can be utilized for flight training for each aircraft type
1-4	I4	Next line number
6-	FREE	Average number of flight hours for a successfully trained student for each aircraft type
1-4	I4	Next line number
6-	FREE	Average number of flight instructor hours for a successfully trained student for each aircraft type
1-4	I4	Next line number
6-	FREE	Time in months required to train a flight instructor before he can instruct students
1-4	I4	Next line number
6-	FREE	Ratio of students on board to landing support officers for each aircraft type
1-4	I4	Next line number
6-	FREE	Number of direct enlisted maintenance personnel required to support one aircraft
1-4	I4	Next line number

TABLE 38 (Cont)

Character	Format	Description
6-	FREE	Number of academic hours per student for each academic instruction type
1-4	I4	Next line number
6-	FREE	Annual student hours an academic instructor can instruct for each academic instruction type
1-4	I4	Next line number
6-	FREE	Time in months an academic instructor must be trained before he can instruct students

TABLE 39

DATA FILE BASCAS

```
1000 NY,
1005  0.100000E+01 0.156000E+03 0.480000E+02 0.100000E+01
1010  0.100000E+04 0.100000E+04 0.100000E+04 0.100000E+04
1015  0.100000E+04 0.480000E+02 0.500000E+02 0.500000E+02
1020  0.100000E+04 0.100000E+04 0.480000E+02
1025  14
1030 PRIMARY      T34B          AGAS          ACAD
1035    1  0
1040  0.500000E+00 0.600000E+01 0.240000E+02
1045  0.782000E+00 0.782000E+00 0.
1050  0.126000E+02 0.            0.
1055  0.420000E+01 0.            0.
1060  0.301000E+01 0.            0.
1065  0.326000E+02 0.            0.
1070  0.292000E+02 0.            0.
1075  0.200000E+01 0.            0.
1080  0.           0.            0.
1085  0.255000E+01 0.            0.
1090  0.500000E+02 0.            0.
1095  0.700000E+03 0.            0.
1100  0.300000E+01 0.300000E+01 0.
1105 AOC SCHOOL   T-2A          JP-4          ACAD
1110    0  0
1115  0.500000E+00 0.100000E+02 0.240000E+02
1120  0.796000E+00 0.796000E+00 0.
1125  0.311000E+03 0.            0.
1130  0.690000E+03 0.            0.
1135  0.556000E+03 0.            0.
1140  0.552000E+02 0.            0.
1145  0.466000E+02 0.            0.
1150  0.300000E+01 0.            0.
1155  0.           0.            0.
1160  0.546000E+01 0.            0.
1165  0.489000E+03 0.            0.
1170  0.700000E+03 0.            0.
1175  0.300000E+01 0.300000E+01 0.
1180 FLIGHT SYS. T2BC          JP-4          ACAD
1185    0  0
1190  0.500000E+00 0.500000E+01 0.240000E+02
1195  0.816000E+00 0.816000E+00 0.
1200  0.365000E+03 0.            0.
1205  0.676000E+03 0.            0.
1210  0.570000E+03 0.            0.
1215  0.496000E+02 0.            0.
1220  0.276000E+02 0.            0.
1225  0.300000E+01 0.            0.
1230  0.           0.            0.
1235  0.716000E+01 0.            0.
1240  0.200000E+03 0.            0.
1245  0.700000E+03 0.            0.
1250  0.300000E+01 0.300000E+01 0.
```

TABLE 39 (Cont)

```
1255 BASIC JET-A T-2A          JP-4
1260    1  0
1265  0.500000E+00 0.110000E+02 0.240000E+02
1270  0.805000E+00 0.805000E+00 0.
1275  0.311000E+03 0.           0.
1280  0.354000E+01 0.           0.
1285  0.285000E+01 0.           0.
1290  0.651000E+02 0.           0.
1295  0.670000E+02 0.           0.
1300  0.200000E+01 0.           0.
1305  0.           0.           0.
1310  0.546000E+01 0.           0.
1315  0.712500E+02 0.           0.
1320  0.           0.           0.
1325  0.           0.           0.
1330 BASIC JET-B T2BC          JP-4
1335    1  0
1340  0.500000E+00 0.900000E+01 0.240000E+02
1345  0.795000E+00 0.795000E+00 0.
1350  0.365000E+03 0.           0.
1355  0.335000E+01 0.           0.
1360  0.285000E+01 0.           0.
1365  0.644000E+02 0.           0.
1370  0.537000E+02 0.           0.
1375  0.200000E+01 0.           0.
1380  0.           0.           0.
1385  0.716000E+01 0.           0.
1390  0.712500E+02 0.           0.
1395  0.           0.           0.
1400  0.           0.           0.
1405 B-JET G/CQ  T2BC          JP-4
1410    1  0
1415  0.500000E+00 0.700000E+01 0.240000E+02
1420  0.830000E+00 0.830000E+00 0.
1425  0.365000E+03 0.           0.
1430  0.263000E+01 0.           0.
1435  0.236000E+01 0.           0.
1440  0.307000E+02 0.           0.
1445  0.209000E+02 0.           0.
1450  0.200000E+01 0.           0.
1455  0.150000E+02 0.           0.
1460  0.776000E+01 0.           0.
1465  0.           0.           0.
1470  0.           0.           0.
1475  0.           0.           0.
```

TABLE 39 (Cont)

```
1480 ADV JET-TF  TF9J         JP-4
1485   1  0
1490  0.500000E+00 0.200000E+02 0.240000E+02
1495  0.846000E+00 0.846000E+00 0.
1500  0.575000E+03 0.           0.
1505  0.290000E+01 0.           0.
1510  0.210000E+01 0.           0.
1515  0.212500E+03 0.           0.
1520  0.145300E+03 0.           0.
1525  0.300000E+01 0.           0.
1530  0.           0.           0.
1535  0.735000E+01 0.           0.
1540  0.930000E+02 0.           0.
1545  0.           0.           0.
1550  0.           0.           0.
1555 ADV JET-TA  TA4J         JP-4
1560   1  0
1565  0.500000E+00 0.200000E+02 0.240000E+02
1570  0.850000E+00 0.850000E+00 0.
1575  0.470000E+03 0.           0.
1580  0.312000E+01 0.           0.
1585  0.210000E+01 0.           0.
1590  0.206100E+03 0.           0.
1595  0.143300E+03 0.           0.
1600  0.300000E+01 0.           0.
1605  0.           0.           0.
1610  0.750000E+01 0.           0.
1615  0.930000E+02 0.           0.
1620  0.           0.           0.
1625  0.           0.           0.
1630 BASIC PROP  328C         AGAS
1635   1  0
1640  0.500000E+00 0.190000E+02 0.240000E+02
1645  0.776000E+00 0.776000E+00 0.
1650  0.505000E+02 0.           0.
1655  0.371000E+01 0.           0.
1660  0.310000E+01 0.           0.
1665  0.127500E+03 0.           0.
1670  0.987000E+02 0.           0.
1675  0.200000E+01 0.           0.
1680  0.           0.           0.
1685  0.432000E+01 0.           0.
1690  0.164250E+03 0.           0.
1695  0.           0.           0.
1700  0.           0.           0.
```

TABLE 39 (Cont)

```
1705 B-PROP CQ    T28C          AGAS
1710   1  0
1715  0.500000E+00 0.400000E+01 0.240000E+02
1720  0.879000E+00 0.879000E+00 0.
1725  0.505000E+02 0.           0.
1730  0.281000E+01 0.           0.
1735  0.222000E+01 0.           0.
1740  0.150000E+02 0.           0.
1745  0.660000E+01 0.           0.
1750  0.200000E+01 0.           0.
1755  0.100000E+02 0.           0.
1760  0.547000E+01 0.           0.
1765  0.           0.           0.
1770  0.           0.           0.
1775  0.           0.           0.
1780 ADV PROP     TS2A          A115
1785   1  0
1790  0.500000E+00 0.170000E+02 0.240000E+02
1795  0.865000E+00 0.865000E+00 0.
1800  0.966000E+02 0.           0.
1805  0.372000E+01 0.           0.
1810  0.275000E+01 0.           0.
1815  0.135700E+03 0.           0.
1820  0.119900E+03 0.           0.
1825  0.300000E+01 0.           0.
1830  0.           0.           0.
1835  0.889000E+01 0.           0.
1840  0.143000E+03 0.           0.
1845  0.           0.           0.
1850  0.           0.           0.
1855 PRE HELO     T28C          AGAS
1860   1  0
1865  0.500000E+00 0.500000E+01 0.240000E+02
1870  0.850000E+00 0.850000E+00 0.
1875  0.505000E+02 0.           0.
1880  0.381000E+01 0.           0.
1885  0.320000E+01 0.           0.
1890  0.235000E+02 0.           0.
1895  0.236000E+02 0.           0.
1900  0.200000E+01 0.           0.
1905  0.           0.           0.
1910  0.480000E+01 0.           0.
1915  0.370000E+02 0.           0.
1920  0.           0.           0.
1925  0.           0.           0.
```

TABLE 39 (Cont)

```
1930 HELO PRIM    TH57          AGAS
1935    1  0
1940  0.500000E+00 0.400000E+01 0.240000E+02
1945  0.836000E+00 0.836000E+00 0.
1950  0.126000E+02 0.           0.
1955  0.331000E+01 0.           0.
1960  0.296000E+01 0.           0.
1965  0.242000E+02 0.           0.
1970  0.244000E+02 0.           0.
1975  0.200000E+01 0.           0.
1980  0.           0.           0.
1985  0.300000E+01 0.           0.
1990  0.350000E+02 0.           0.
1995  0.           0.           0.
2000  0.           0.           0.
2005 HELO ADV     THIL          JP-4
2010    1  0
2015  0.500000E+00 0.800000E+01 0.240000E+02
2020  0.864000E+00 0.864000E+00 0.
2025  0.100000E+03 0.           0.
2030  0.298000E+01 0.           0.
2035  0.277000E+01 0.           0.
2040  0.570000E+02 0.           0.
2045  0.598000E+02 0.           0.
2050  0.200000E+01 0.           0.
2055  0.           0.           0.
2060  0.602000E+01 0.           0.
2065  0.350000E+02 0.           0.
2070  0.           0.           0.
2075  0.           0.           0.
```

4.11 Name of Training Pipeline. These data are described in Table 40.

TABLE 40

DATA FILE PIPE PIPELINE NAME DATA

Character	Format	Description
1-4	I4	First line number (any four-digit number, but must be the smallest line number)
6-8	I3	Number of phases in the pipeline
9-20	3A4	Name of training pipeline

4.12 Phase Sequence and Attrition Rates. These data are described in Table 41. One line is typed for each phase in the training pipeline. Note that the number of phases are specified on the previous line.

TABLE 41

DATA FILE PIPE PHASE SEQUENCE AND ATTRITION RATES

Character	Format	Description
1-4	I4	Next line number
6-	FREE	Number of the first following phase
Next	FREE	Number of the second following phase
Next	FREE	Number of the third following phase
Next	FREE	Number of the training phase in question. (The foregoing three entries are the numbers of the phases following the phase entered here.) The entered phase number must correspond to a phase in Data File BASCAS
Next	FREE	Attrition rate of this phase

4.13 End of File. When the user has completed entering all data for a particular training pipeline (i.e., has entered a line of pipeline name data and one or more lines of phase sequence and attrition data), other pipelines may be entered by the same procedure. There is no upper limit to the number of pipelines that may be entered. When all pipelines have been entered, an end of file line must be entered to indicate to the automated IFRS system that no additional pipelines exist. These data are described in Table 42.

TABLE 42

DATA FILE PIPE END OF FILE DATA

Character	Format	Description
1-4	I4	Largest line number
6-20	A3, 3A4	"-99END OF FILE ⌀" End of file designator

4.14 Table 43 contains a list of the data currently stored in Data File PIPE.

DATA FILE RUNDAT

4.15 Data File RUNDAT contains all the data used in developing runway requirements. Since this data file may be lengthy for the amount of data contained in it, only off-line file update procedures are possible. Several program checks are made by the automated IFRS system to ensure compatibility between the Runway Data File and the LSR data base, and the user must be aware of the following conditions imposed on the Runway Data File:

a. Only training phases that provide flight instruction are included in Data File RUNDAT, e.g., AOC School and Flight Systems are not represented in this data file because flight instruction does not take place in either phase.

b. The sequence and names of training phases in the LSR data base (either Data File BASCAS or the internal on-line modifications) must be identical to those in the runway data base. This condition does not hold when the foregoing restriction applies, viz., for AOC School. In addition, when the user desires to add, delete, or change the names of training phases while running the automated IFRS system, an identical change must be made to the

TABLE 43

DATA FILE PIPE

```
1000   13NAVY OFFICER
1005    3  0  0  1  0.0900
1010    4  9  0  3  0.0270
1015    5  0  0  4  0.0500
1020    6  0  0  5  0.0200
1025    7  8  0  6  0.0200
1030    0  0  0  7  0.0400
1035    0  0  0  8  0.0400
1040   10  0  0  9  0.1400
1045   11 12  0 10  0.0040
1050    0  0  0 11  0.0080
1055   13  0  0 12  0.0050
1060   14  0  0 13  0.0020
1065    0  0  0 14  0.0020
1070   14NAVY - AOC
1075    2  0  0  1  0.1400
1080    3  0  0  2  0.0730
1085    4  9  0  3  0.0320
1090    5  0  0  4  0.0800
1095    6  0  0  5  0.0310
1100    7  8  0  6  0.0160
1105    0  0  0  7  0.0520
1110    0  0  0  8  0.0520
1115   10  0  0  9  0.2400
1120   11 12  0 10  0.0060
1125    0  0  0 11  0.0120
1130   13  0  0 12  0.0060
1135   14  0  0 13  0.0050
1140    0  0  0 14  0.0050
1145   12MARINE
1150    3  0  0  1  0.0500
1155    4  9  0  3  0.0150
1160    5  0  0  4  0.0400
1165    6  0  0  5  0.0100
1170    7  8  0  6  0.0100
1175    0  0  0  7  0.0300
1180    0  0  0  8  0.0300
1185   10  0  0  9  0.0900
1190   12  0  0 10  0.0050
1195   13  0  0 12  0.0040
1200   14  0  0 13  0.0020
1205    0  0  0 14  0.0020
1210    7C-GRD & FOR.
1215    3  0  0  1  0.0500
1220    9  0  0  3  0.0200
1225   11 12  0  9  0.0500
1230    0  0  0 11  0.
1235   13  0  0 12  0.
1240   14  0  0 13  0.
1245    0  0  0 14  0.0100
1250 -99END OF FILE
```

Runway Data File before continuing operation. For example, if the user wishes to delete Advanced Jet-TA from the training syllabus, a prior, identical change must be made to the runway data base.

c. For each phase of training, the number of types of flight instruction and the associated aircraft names in the LSR data base must exactly correspond to those in the runway data base. For example, if an advanced jet phase utilizing two aircraft types, TA-4J and TF-9J, existed in the LSR data base, Data File RUNDAT must also contain two aircraft types, TA-4J and TF-9J.

If these conditions are not completely met, the automated IFRS system prints an appropriate error message and terminates.

4.16 To define totally the runway data for each training phase, 13 types of data are required. These data values are entered phase by phase following the sequence of the phases. The data described in Table 44 constitute Data File RUNDAT.

4.17 Data in the formats shown in Table 44 are entered for all training phases within the foregoing restrictions. Table 45 contains a list of the data currently stored in Data File RUNDAT.

TABLE 44

DATA FILE RUNDAT ELEMENTS

Character	Format	Description
	Phase Designator	
1-4	I4	Line number (any four-digit line number)
6-8	I3	Number of aircraft types in a certain phase of training (see condition c above)
9-20	3A4	Name of the training phase (see conditions a and b above)
21-24	A4	Name of first aircraft type
25-28	A4	Name of second aircraft type
29-32	A4	Name of third aircraft type
	Daylight Flight Hours	
1-4	I4	Next line number
6-	FREE	Monthly daylight hours for the first 6 months of the year (six values)
1-4	I4	Next line number
6-	FREE	Monthly daylight hours for the second 6 months of the year (six values)
	Runway Down Time	
1-4	I4	Next line number
6-	FREE	Percent of flyable time the main runway is down due to repairs, missed approaches, nontraining flights, etc. Also included is the percent of time the main runway is being utilized for non-OLF touch-and-go sorties.
Next	FREE	Percent of time an OLF is down.
	Weather Factors by Aircraft Type*	
1-4	I4	Next line number
6-	FREE	Percent monthly flyable weather for the first 6 months (six values)
1-4	I4	Next line number
6-	FREE	Percent monthly flyable weather for the second 6 months (six values)

* Monthly weather factors are entered by aircraft type. This data entry is repeated for all aircraft types specified in data for Phase Designator.

TABLE 44 (Cont)

Character	Format	Description
	Sorties per Student	
1-4	I4	Next line
6-	FREE	Average number of sorties flown by each successful student**
	Sortie Length	
1-4	I4	Next line number
6-	FREE	Length of time in hours of the average sortie**
	Launch time	
1-4	I4	Next line number
6-	FREE	Average time in hours to launch an aircraft**
	Recovery time	
1-4	I4	Next line number
6-	FREE	Average time in hours to recover an aircraft**
	Airspace	
1-4	I4	Next line number
6-	FREE	Maximum number of aircraft which can simultaneously be aloft without saturating the airspace**

** Three data values must be entered. The first, second, and third values correspond to the first, second, and third aircraft types, respectively. When fewer than three aircraft types exist, the remaining data fields should contain single zeros. Incomplete entries will produce an error condition.

TABLE 44 (Cont)

Character	Format	Description
Touch-and-Go Requirements		
1-4	I4	Next line number
6-	FREE	Average number of touch-and-go landings accomplished by each successful student**
Touch-and-Go Time		
1-4	I4	Next line number
6-	FREE	Average time in hours to perform a touch-and-go landing**
Main Runway Utilization for Touch-and-Go		
1-4	I4	Next line number
6-	FREE	Percent of all touch-and-go landings performed at the NAS**
Target Approaches		
1-4	I4	Next line number
6-	FREE	Average number of air-to-ground target approaches accomplished by a successfully trained student**
Time Over Target		
1-4	I4	Next line number
6-	FREE	Average time in hours a student spends over a target area**

TABLE 45

DATA FILE RUNDAT

```
1000   1PRIMARY      T34B
1005    9.380 10.080 10.970 11.850 12.680 13.120
1010   12.920 12.250 11.380 10.500  9.620  9.230
1015   0.1500 0.5000
1020   0.6300 0.6500 0.6900 0.7500 0.8400 0.8300
1025   0.8700 0.8300 0.8600 0.8800 0.7500 0.6800
1030   0.270000E+02 0.            0.
1035   0.130000E+01 0.            0.
1040   0.763889E-02 0.            0.
1045   0.121528E-01 0.            0.
1050   0.109000E+03 0.            0.
1055   0.900000E+01 0.            0.
1060   0.145833E-01 0.            0.
1065   0.500000E-01 0.            0.
1070   0.           0.            0.
1075   0.833333E-01 0.            0.
1080    1BASIC JET-A T-2A
1085    9.250 10.020 10.930 11.920 12.820 13.280
1090   13.050 12.350 11.450 10.430  9.480  9.100
1095   0.1500 0.5000
1100   0.5900 0.6300 0.7800 0.8200 0.8800 0.8500
1105   0.9000 0.9100 0.8100 0.8600 0.7500 0.7700
1110   0.480000E+02 0.            0.
1115   0.143000E+01 0.            0.
1120   0.829861E-02 0.            0.
1125   0.158334E-01 0.            0.
1130   0.560000E+02 0.            0.
1135   0.160000E+02 0.            0.
1140   0.190000E-01 0.            0.
1145   0.500000E-01 0.            0.
1150   0.           0.            0.
1155   0.833333E-01 0.            0.
1160    1BASIC JET-B T2BC
1165    9.250 10.020 10.930 11.920 12.280 13.280
1170   13.050 12.350 11.350 10.430  9.480  9.100
1175   0.1500 0.5000
1180   0.6000 0.6500 0.8000 0.8400 0.9000 0.8700
1185   0.9200 0.9400 0.8300 0.8900 0.7600 0.7900
1190   0.380000E+02 0.            0.
1195   0.147000E+01 0.            0.
1200   0.829861E-02 0.            0.
1205   0.158334E-01 0.            0.
1210   0.560000E+02 0.            0.
1215   0.130000E+02 0.            0.
1220   0.190000E-01 0.            0.
1225   0.500000E-01 0.            0.
1230   0.           0.            0.
1235   0.833333E-01 0.            0.
```

TABLE 45 (Cont)

```
1240    1B-JET G/CQ  T2BC
1245    9.380 10.080 10.970 11.850 12.680 13.120
1250   12.920 12.250 11.380 10.500  9.620  9.230
1255   0.1500 0.5000
1260   0.6800 0.6700 0.6900 0.7400 0.8900 0.8300
1265   0.8900 0.8500 0.8300 0.8900 0.7100 0.8100
1270   0.290000E+02 0.            0.
1275   0.111000E+01 0.            0.
1280   0.756945E-02 0.            0.
1285   0.143750E-01 0.            0.
1290   0.380000E+02 0.            0.
1295   0.100000E+02 0.            0.
1300   0.172500E-01 0.            0.
1305   0.500000E-01 0.            0.
1310   0.           0.            0.
1315   0.833333E-01 0.            0.
1320    1ADV JET-TF  TF9J
1325    9.500 10.200 10.980 11.850 12.530 12.650
1330   12.770 12.150 11.380 10.600  9.780  9.420
1335   0.1500 0.5000
1340   0.6800 0.7900 0.8100 0.8100 0.8600 0.8900
1345   0.9500 0.9500 0.9100 0.9000 0.8700 0.6600
1350   0.105000E+03 0.            0.
1355   0.136000E+01 0.            0.
1360   0.297570E-01 0.            0.
1365   0.250000E-01 0.            0.
1370   0.413000E+03 0.            0.
1375   0.330000E+02 0.            0.
1380   0.300000E-01 0.            0.
1385   0.500000E-01 0.            0.
1390   0.           0.            0.
1395   0.833333E-01 0.            0.
1400    1ADV JET-TA  TA4J
1405    9.500 10.200 10.980 11.850 12.530 12.650
1410   12.770 12.150 11.380 10.600  9.780  9.420
1415   0.1500 0.5000
1420   0.6800 0.7900 0.8100 0.8100 0.8600 0.8900
1425   0.9500 0.9500 0.9100 0.9000 0.8700 0.6600
1430   0.105000E+03 0.            0.
1435   0.136000E+01 0.            0.
1440   0.297570E-01 0.            0.
1445   0.250000E-01 0.            0.
1450   0.413000E+03 0.            0.
1455   0.330000E+02 0.            0.
1460   0.300000E-01 0.            0.
1465   0.500000E-01 0.            0.
1470   0.           0.            0.
1475   0.833333E-01 0.            0.
```

TABLE 45 (Cont)

```
1480   1BASIC PROP  T28C
1485    9.380 10.080 10.970 11.850 12.680 13.120
1490   12.920 12.250 11.380 10.500  9.620  9.230
1495   0.1500 0.5000
1500   0.6300 0.6500 0.7100 0.7600 0.8200 0.7700
1505   0.8100 0.8000 0.7600 0.8600 0.7300 0.6600
1510   0.750000E+02 0.            0.
1515   0.154000E+01 0.            0.
1520   0.458334E-02 0.            0.
1525   0.120486E-01 0.            0.
1530   0.278000E+03 0.            0.
1535   0.240000E+02 0.            0.
1540   0.144583E-01 0.            0.
1545   0.500000E-01 0.            0.
1550   0.           0.            0.
1555   0.833333E-01 0.            0.
1560    1B-PROP CQ   T28C
1565    9.380 10.080 10.970 11.850 12.680 13.120
1570   12.920 12.250 11.380 10.500  9.620  9.230
1575   0.1500 0.5000
1580   0.7600 0.7800 0.8200 0.8800 0.8800 0.8900
1585   0.8900 0.9000 0.8800 0.9500 0.8800 0.8100
1590   0.160000E+02 0.            0.
1595   0.103000E+01 0.            0.
1600   0.420139E-02 0.            0.
1605   0.255555E-01 0.            0.
1610   0.100000E+04 0.            0.
1615   0.600000E+01 0.            0.
1620   0.306667E-01 0.            0.
1625   0.500000E-01 0.            0.
1630   0.           0.            0.
1635   0.833333E-01 0.            0.
1640    1ADV PROP    TS2A
1645    9.500 10.200 10.980 11.850 12.530 12.850
1650   12.770 12.150 11.380 10.600  9.780  9.420
1655   0.1500 0.5000
1660   0.6700 0.7600 0.8500 0.8300 0.8900 0.9400
1665   0.9700 0.9700 0.9500 0.9400 0.8700 0.6700
1670   0.390000E+02 0.            0.
1675   0.278000E+01 0.            0.
1680   0.319445E-01 0.            0.
1685   0.232639E-01 0.            0.
1690   0.204000E+03 0.            0.
1695   0.130000E+02 0.            0.
1700   0.279167E-01 0.            0.
1705   0.500000E-01 0.            0.
1710   0.           0.            0.
1715   0.833333E-01 0.            0.
```

TABLE 45 (Cont)

```
1720   1PRE HELO     T28C
1725    9.380 10.080 10.970 11.850 12.680 13.120
1730   12.920 12.250 11.380 10.500  9.620  9.230
1735   0.1500 0.5000
1740   0.7100 0.7700 0.8000 0.8700 0.9100 0.8600
1745   0.9200 0.8900 0.8900 0.9100 0.8500 0.8000
1750   0.140000E+02 0.            0.
1755   0.178000E+01 0.            0.
1760   0.127777E-01 0.            0.
1765   0.155555E-01 0.            0.
1770   0.100000E+04 0.            0.
1775   0.500000E+01 0.            0.
1780   0.186667E-01 0.            0.
1785   0.500000E-01 0.            0.
1790   0.           0.            0.
1795   0.833333E-01 0.            0.
1800    1HELO PRIM   TH57
1805    9.380 10.080 10.970 11.850 12.680 13.120
1810   12.920 12.250 11.380 10.500  9.620  9.230
1815   0.1500 0.5000
1820   0.7000 0.7100 0.7300 0.7900 0.8700 0.8700
1825   0.8900 0.9000 0.9000 0.9100 0.8100 0.7200
1830   0.220000E+02 0.            0.
1835   0.119000E+01 0.            0.
1840   0.270139E-01 0.            0.
1845   0.179861E-01 0.            0.
1850   0.200000E+02 0.            0.
1855   0.800000E+01 0.            0.
1860   0.215833E-01 0.            0.
1865   0.500000E-01 0.            0.
1870   0.           0.            0.
1875   0.833333E-01 0.            0.
1880    1HELO ADV    THIL
1885    9.380 10.080 10.970 11.850 12.680 13.120
1890   12.920 12.250 11.380 10.500  9.620  9.230
1895   0.1500 0.5000
1900   0.7500 0.7500 0.7700 0.8300 0.9100 0.9100
1905   0.9300 0.9400 0.9200 0.9500 0.8600 0.7600
1910   0.300000E+02 0.            0.
1915   0.179000E+01 0.            0.
1920   0.210070E-01 0.            0.
1925   0.139930E-01 0.            0.
1930   0.400000E+02 0.            0.
1935   0.100000E+02 0.            0.
1940   0.167917E-01 0.            0.
1945   0.500000E-01 0.            0.
1950   0.           0.            0.
1955   0.833333E-01 0.            0.
```

ASSET POSITION DATA FILE

4.18 The Asset Position Data File, called "RPIFI*", contains four types of information: (a) the category code, description, and unit of measurement code for each of the 30 facilities as presented in Table 46; (b) the amount of each facility, classified as standard or substandard, available at each of the nine bases considered; (c) the effective amount, length, thickness, and composition of each runway at each of the nine bases; and (d) the amount of ready fuel storage for each of three fuel types available at each base.

4.19 Each of the foregoing items can only be updated off-line. Even when no amount of a certain facility is available, a zero must be present and the line cannot be omitted. In the case of runways, 10 lines must be provided for each base. If there are fewer than 10 runways, the remaining lines must contain the proper number of zeros.

4.20 Line numbers are not sequential. Each line number serves as a code for referencing the exact item desired. This coding is described in Table 47 for each type of item. The NAS code numbers stored in this data file are listed in Table 48, and the runway thickness factors used appear in Table 49.

4.21 Table 50 contains a list of the data currently stored in data file RPIFI*.

AIRCRAFT DATA FILE

4.22 The Aircraft Data File, called "ACDAT*", contains 18 items of information for each of the 21 aircraft types considered in the IFRS model. These items are broken down into the following lines of information for each aircraft type.

a. Aircraft name (1 item)

b. Parking apron data (4 items)

c. Hangar data (4 items)

d. Warehouse data (3 items)

e. Required runway data (3 items)

f. Cost data (2 items)

g. Inventory (1 item).

This list is modified slightly for aircraft types 16 through 21, which are generic types used for tenant aircraft at the various bases. The same number of items is required for these aircraft, but the items differ from those required for the

TABLE 46

INTERNAL FACILITY NUMBERS, CODES, AND DESCRIPTIONS

Internal Facility Number	Category Code	Description
01	01320	Aircraft Parking Apron
02	12540	Distribution Pipeline
03	14140	Aircraft Operations Building
04	17110	Academic Building
05	21110	Mainenance Hangar
06	21910	Public Works Maintenance Shop
07	04210	General Warehouse
08	55010	Dispensary
09	61010	Administrative Offices
10	71110	Family Housing
11	72210	Enlisted Men's Barracks
12	72310	Enlisted Mess
13	72415	BOQ
14	72416	BOQ Mess
15	74014	Exchange
16	74063	Service Club
17	81160	Stand-by Generator
18	81230	Electric Distribution Line
19	83210	Sanitary Sewer
20	84210	Water Distribution Line
21	85110	Road
22	85210	Parking Area
23	87110	Storm Sewer
24	84120	Drainage Ditch

TABLE 46 (Cont)

Internal Facility Number	Category Code	Description
25	87210	Security Fence
26	00000	Ineligible Housing
27	01320	Peripheral Taxiway
28	11320	Total Parking Apron
29	04210	Shed Space
30	44210	Total Warehouse

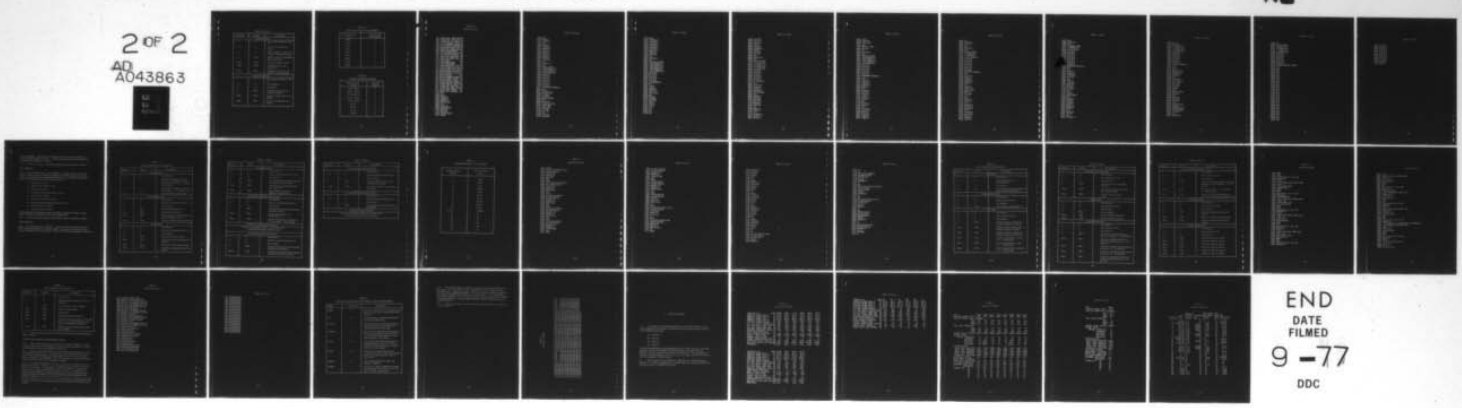
TABLE 47

ASSETS POSITION DATA FILE DESCRIPTION

Character	Format	Description
Category Codes, Descriptions, and Unit Codes		
1	I1	The integer, 1, is always the first character for lines of this type
2-3	I2	Two-digit number between 01 and 30 representing the internal facility number (see Table 46)
5-9	I5	Five-digit Navy category code designator for the facility. Leading zero necessary or right adjust
11-22	A12	Twelve-character description of facility
24-25	A2	Two-character units code for facility
Amount of Available Facility		
1	I1	Base number between 1 and 9 (see Table 48)
2-3	I2	Internal facility number (see Table 46). Leading zero necessary for 01-09
4	I1	Digit 0 added to make the line a four-digit number
6-	FREE	Amount of facility available in standard condition
Next	FREE	Amount of substandard facility available

AD-A043 863 OPERATIONS RESEARCH INC SILVER SPRING MD F/G 5/1
DEVELOPMENT OF A PRELIMINARY AUTOMATED TOTAL SYSTEMS MODEL FOR --ETC(U)
FEB 70 T N KYLE, R D HEILBRON, J D AVILA N00025-67-C-0031
UNCLASSIFIED ORI-TR-583-VOL-3 NL

2 OF 2
AD A043863



END
DATE FILMED
9 -77
DDC

TABLE 47 (Cont)

Character	Format	Description
Runway Assets		
1	I1	Base number between 1 and 9
2-3	I1	51-60, one number per runway
4	I1	Digit 0 added to make line number a four-digit number
6-	FREE	Effective runway availability (wind rose data)
Next	FREE	Length of runway in feet
Next	FREE	Thickness factor (see Table 49)
Next	FREE	Composition factor (1 for concrete, 2 for asphalt)
Ready Fuel Storage		
1	I1	Base number between 1 and 9
2-3	I2	The number 61
4	I1	The digit 0
6-	FREE	Amount of ready jet fuel storage in gallons
Next	FREE	Amount of ready avgas fuel storage
Next	FREE	Amount of ready helo fuel storage

TABLE 48

NAVAL AIR STATION CODE NUMBERS

Naval Air Station Code	Corresponding Base Number
CHAS	1
CORP	2
ELLY	3
KING	4
MERI	5
PENS	6
SAUF	7
WHIT	8
PHAN	9

TABLE 49

RUNWAY THICKNESS FACTORS

Aircraft Weight Class	Thickness Factors
AA-5, AA-10	1
AA-15, AB-15	2
AA-20, AB-20	3
AA-25, AB-25	4
AA-30, AB-30	5
AA-35	6
AA-45	7
AD-70	8
AD-90	9

TABLE 50

DATA FILE RPIFI*

```
101 01320,A/C PKNG APN,SY
102 12540,DIST PIPELIN,MI
103 14140,A/C ØP BLDG ,SF
104 17110,ACADEMC BLDG,SF
105 21110,MAINT HANGAR,SF
106 21910,PW MAINT SHP,SF
107 04210,GEN WAREHØUS,SF
108 55010,DISPENSARY  ,SF
109 61010,ADMIN ØFFICE,SF
110 71110,FAM HØUSING ,UN
111 72210,EM BARRACKS ,MN
112 72310,EM MESS HALL,SF
113 72415,BØQ         ,MN
114 72416,BØQ MESS    ,SF
115 74014,EXCHANGE    ,SF
116 74063,SERVICE CLUB,SF
117 81160,STAND BY GEN,UN
118 81230,ELEC DIST LN,LF
119 83210,SANITR SEWER,LF
120 84210,WATER DIS LN,LF
121 85110,RØADS       ,MI
122 85210,PARKING AREA,SY
123 87110,STØRM SEWER ,LF
124 87120,DRAIN DITCH ,LF
125 87210,SECURT FENCE,LF
126 00000,INELIG HØUSE,UN
127 01320,PER TAXIWAY ,SY
128 11320,TØT PKNG APN,SY
129 04210,SHED SPACE  ,SF
130 44210,TØT WAREHSE ,SF
1010 0,0
1020 0,0
1030 21858,0
1040 21832,0
1050 209473,0
1060 27370,512
1070 0,0
1080 0,15136
1090 60563,1951
1100 668,205
1110 954,451
1120 18500,16151
1130 40,80
```

TABLE 50 (Cont)

```
1140 0,0
1150 9355,0
1160 12730,0
1170 0,0
1180 94925,0
1190 71683,0
1200 67885,0
1210 14.72,0
1220 90381,0
1230 57875,0
1240 36269,0
1250 79806,0
1260 110,108
1270 0,0
1280 130361,0
1290 0,0
1300 78312,19215
1510 .839,8000,9,1
1520 .839,8000,9,1
1530 .086,6000,9,1
1540 0,0,0,0
1550 0,0,0,0
1560 0,0,0,0
1570 0,0,0,0
1580 0,0,0,0
1590 0,0,0,0
1600 0,0,0,0
1610 1701000,100000,0
2010 0,0
2020 8.55,0
2030 61573,7692
2040 0,37661
2050 0,72210
2060 53273,20053
2070 0,0
2080 0,21100
2090 77693,196794
2100 1383,428
2110 1251,195
2120 0,33290
2130 76,100
2140 0,0
2150 0,27329
2160 0,23334
```

TABLE 50 (Cont)

```
2170 0,0
2180 340069,0
2190 174834,0
2200 251642,0
2210 44.44,0
2220 369800,0
2230 233152,0
2240 26812,0
2250 28652,0
2260 294,127
2270 0,0
2280 427700,0
2290 0,0
2300 414794,518226
2510 .839,8000,9,1
2520 .839,5000,2,2
2530 .82,5000,2,2
2540 .622,5000,2,2
2550 .641,5000,2,2
2560 0,0,0,0
2570 0,0,0,0
2580 0,0,0,0
2590 0,0,0,0
2600 0,0,0,0
2610 0,1300000,0
3010 0,0
3020 2.3,0
3030 1409,0
3040 29023,0
3050 87654,0
3060 4551,1071
3070 0,0
3080 8345,0
3090 10740,0
3100 460,576
3110 544,0
3120 9251,0
3130 134,0
3140 0,0
3150 0,0
3160 0,0
3170 0,0
```

TABLE 50 (Cont)

```
3180 50170,0
3190 10015,0
3200 31645,0
3210 5.8,0
3220 25709,0
3230 174520,0
3240 8328,0
3250 20662,0
3260 49,143
3270 0,0
3280 358146,0
3290 0,0
3300 22576,51968
3510 .9,3125,1,2
3520 .9,3025,1,2
3530 .9,3350,1,2
3540 .1,3185,1,2
3550 0,0,0,0
3560 0,0,0,0
3570 0,0,0,0
3580 0,0,0,0
3590 0,0,0,0
3600 0,0,0,0
3610 0,114960,0
4010 0,0
4020 1.97,1.5
4030 16636,0
4040 15165,0
4050 381285,0
4060 2994,24492
4070 0,0
4080 21838,0
4090 27092,0
4100 898,209
4110 820,796
4120 28068,0
4130 120,100
4140 0,0
4150 22661,0
4160 7590,0
4170 0,0
4180 103086,0
4190 63192,0
4200 82185,0
```

TABLE 50 (Cont)

```
4210 34,0
4220,148978,0
4230 151177,0
4240 0,0
4250 58976,19000
4260 226,35
4270 0,0
4280 241954,0
4290 0,0
4300 130333,14348
4510 .925,8000,9,1
4520 .925,8000,9,1
4530 .075,8000,9,1
4540 .075,8000,9,1
4550 0,0,0,0
4560 0,0,0,0
4570 0,0,0,0
4580 0,0,0,0
4590 0,0,0,0
4600 0,0,0,0
4610 3768000,600000,0
5010 0,0
5020 1.87,0
5030 12217,0
5040 30023,0
5050 125764,0
5060 9080,0
5070 0,0
5080 19562,0
5090 33938,0
5100 760,131
5110 1148,0
5120 19241,0
5130 275,0
5140 0,0
5150 18610,0
5160 7507,0
5170 0,0
5180 111340,0
5190 69119,0
5200 72089,0
5210 14.16,0
5220 76290,0
5230 12209,0
```

TABLE 50 (Cont)

```
5240 0,0
5250 155289,0
5260 121,15
5270 0,0
5280 288263,0
5290 0,0
5300 95893,14880
5510 .9,8000,9,1
5520 .9,8000,9,1
5530 .745,6400,9,1
5540 0,0,0,0
5550 0,0,0,0
5560 0,0,0,0
5570 0,0,0,0
5580 0,0,0,0
5590 0,0,0,0
5600 0,0,0,0
5610 2334990,49980,0
6010 0,0
6020 17.03,0
6030 20274,0
6040 13406,0
6050 228381,0
6060 71028,0
6070 0,0
6080 16605,0
6090 276314,0
6100 1099,1379
6110 2910,0
6120 37314,0
6130 577,0
6140 0,0
6150 78203,0
6160 15383,0
6170 0,0
6180 669038,0
6190 138190,0
6200 693604,0
6210 59,0
6220 310050,0
6230 151792,0
6240 29417,0
6250 75682,0
6260 105,311
```

TABLE 50 (Cont)

```
6270 0,0
6280 465876,0
6290 0,0
6300 1168499,1906
6510 .9,8000,9,1
6520 .1,6137,9,1
6530 0,0,0,0
6540 0,0,0,0
6550 0,0,0,0
6560 0,0,0,0
6570 0,0,0,0
6580 0,0,0,0
6590 0,0,0,0
6600 0,0,0,0
6610 2268000,923916,0
7010 0,0
7020 0,0
7030 12421,0
7040 34601,0
7050 111685,0
7060 11713,0
7070 0,0
7080 7471,0
7090 15791,0
7100 380,576
7110 22,603
7120 0,12055
7130 374,0
7140 0,0
7150 5705,0
7160 2435,4870
7170 0,0
7180 33986,0
7190 9635,0
7200 21632,0
7210 6.29,0
7220 22134,0
7230 50020,0
7240 0,0
7250 32150,0
7260 36,105
7270 0,0
7280 135932,0
```

TABLE 50 (Cont)

```
7290 0,0
7300 31634,0
7510 .1,5200,1,2
7520 .9,6035,1,2
7530 .1,5296,1,2
7540 .9,5356,1,2
7550 0,0,0,0
7560 0,0,0,0
7570 0,0,0,0
7580 0,0,0,0
7590 0,0,0,0
7600 0,0,0,0
7610 15000,150000,0
8010 0,0
8020 4,0
8030 5231,0
8040 6028,29459
8050 157501,0
8060 23315,0
8070 0,0
8080 0,11204
8090 21119,5062
8100 921,394
8110 566,644
8120 0,13721
8130 0,246
8140 0,0
8150 3093,13033
8160 0,9788
8170 0,0
8180 64747,0
8190 51805,0
8200 65217,0
8210 17,11
8220 98662,5648
8230 18186,0
8240 183694,1000
8250 56938,8000
8260 114,154
8270 0,0
8280 350555,0
```

TABLE 50 (Cont)

```
8290 0,0
8300 27894,19220
8510 .9,6000,1,2
8520 .9,6000,1,2
8530 .1,6000,1,2
8540 .1,6000,1,2
8550 0,0,0,0
8560 0,0,0,0
8570 0,0,0,0
8580 0,0,0,0
8590 0,0,0,0
8600 0,0,0,0
8610 733840,452331,15000
9010 0,0
9020 0,0
9030 0,0
9040 0,0
9050 0,0
9060 0,0
9070 0,0
9080 0,0
9090 0,0
9100 0,0
9110 0,0
9120 0,0
9130 0,0
9140 0,0
9150 0,0
9160 0,0
9170 0,0
9180 0,0
9190 0,0
9200 0,0
9210 0,0
9220 0,0
9230 0,0
9240 0,0
9250 0,0
9260 0,0
9270 0,0
9280 0,0
9290 0,0
9300 0,0
```

TABLE 50 (Cont)

```
9510  0,0,0,0
9520  0,0,0,0
9530  0,0,0,0
9540  0,0,0,0
9550  0,0,0,0
9560  0,0,0,0
9570  0,0,0,0
9580  0,0,0,0
9590  0,0,0,0
9600  0,0,0,0
9610  0,0,0
```

training aircraft. Descriptions and formats of the data for both phase and training aircraft appear in Table 51. The internal aircraft code numbers used in this file are presented in Table 52.

4.23 Table 53 provides a list of the data currently contained in ACDAT*.

BASE DATA FILE

4.24 The Base Data File, called "BASED*", contains 31 pieces of information for each of the nine bases considered in the IFRS system. This information is distributed among the following nine lines in the data file for each base. The formats used are described in Table 54.

a. NAS name (1 item)

b. Parking apron depth (1 item)

c. Fuel data (6 items)

d. Classroom and student data (3 items)

e. Tenant data (3 items)

f. Family housing data (5 items)

g. Base dependent planning factors (3 items)

h. Runway factors (3 items)

i. Tenant aircraft (6 items).

In the analysis of the phantom base, the factors contained in BASED* should reflect the planned estimates for the items represented.

4.25 Table 55 provides a listing of the data currently contained in BASED*.

COST DATA FILE

4.26 The Cost Data File, "INVCO*", contains costing information for each of the facilities presently in the IFRS system. One line is specified for each of the 30 facilities now in the model. The format for each line appears in Table 56.

TABLE 51

AIRCRAFT DATA FILE DESCRIPTION

Character	Format	Description
	Aircraft Name	
1	I1	The integer 1
2-3	I2	Internal aircraft number (see Table 52). Numbers must be be between 01 and 21. Leading 0 is required
4	I1	The integer 1 (indicates type of information, i.e., aircraft name)
6-9	A4	Four-character aircraft name
	Parking Apron Data	
1	I1	The integer 1
2-3	I2	Internal aircraft number (01-21)
4	I1	The integer 2
6-	FREE	Aircraft length in feet (A)
Next	FREE	Wing span in feet (B)
Next	FREE	Wing span plus aircraft spacing within column in feet (C)
Next	FREE	Taxiway width required in feet (D)
	Hangar Data	
1	I1	The integer 1
2-3	I2	Internal aircraft number (01-21)
4	I1	The integer 3
6-	FREE	Aircraft per hangar module
Next	FREE	Aircraft per crew and equipment module
Next	FREE	Aircraft per basic shop module
Next	FREE	Aircraft per supplementary shop module

TABLE 51 (Cont)

Character	Format	Description
Warehouse Data		
1	I1	The integer 1
2-3	I2	Internal aircraft number (01-21)
4	I1	The integer 4
6-	FREE	Covered warehouse space required per aircraft in square feet
Next	FREE	Shed space required per aircraft in square feet
Next	FREE	Open storage required per aircraft in square feet
Runway Data (Training Aircraft Only)		
1	I1	The integer 1
2-3	I2	Internal aircraft number (01-21)
4	I1	The integer 5
6-	FREE	Runway length required for landing or takeoff in feet
Next	FREE	Weight class factor (1-9) (see Table 49)
Next	FREE	Runway composition requirement (1 for concrete, 2 for asphalt)
Runway Data (Tenant Aircraft Only)		
Same as for training aircraft, except that zero is entered for runway length required		
Cost Data (Training Aircraft Only)		
1	I1	The integer 1
2-3	I2	Internal aircraft number (01-15)
4	I1	The integer 6
6-	FREE	Flyaway investment cost of aircraft in thousands of dollars
Next	FREE	Operation and maintenance (support) cost per flight hour in dollars

TABLE 51 (Cont)

Character	Format	Description
Cost Data (Tenant Aircraft Only)		
1	I1	The integer 1
2-3	I2	Internal aircraft number (16-21)
4	I1	The integer 6
6-	FREE	Average gallons of fuel used annually per aircraft
Next	FREE	Fuel type (1 for jet, 2 for avgas, 3 for helo)
Inventory (Training Aircraft Only)		
1	I1	The integer 1
2-3	I2	Internal aircraft number (01-15)
4	I1	The integer 7
6-	FREE	Total number of aircraft available to CNATRA
Inventory (Tenant Aircraft)		
Same as for training aircraft, except that zero is entered for total number of aircraft		

TABLE 52

INTERNAL AIRCRAFT CODE NUMBERS

Internal Aircraft Number	Present Aircraft Name
1	T-34B
2	T-28C
3	T-2A
4	T-2BC
5	TF-9J
6	TA-4J
7	TS-2A
8	TH-1L
9	TH-57
10	H-34
11-15	Unused
16	VF
17	VT
18	VR
19	VO
20	VW
21	H

TABLE 53

DATA FILE ACDAT*

```
1011 T34B
1012 25.8,32.8,47.8,72.8
1013 24,48,144,96
1014 175,5,50
1015 3000,1,2
1016 40,2.57
1017 150
1021 T28C
1022 34.5,40.6,55.6,80.6
1023 24.0,48,144,96
1024 175,5,50
1025 5000,1,2
1026 500,5.78
1027 469
1031 T-2A
1032 35.5,35.5,68,90
1033 24,48,144,96
1034 375,8,110
1035 5000,1,1
1036 600,13.01
1037 114
1041 T2BC
1042 35.5,35.5,68,90
1043 24,48,144,96
1044 375,8,110
1045 5000,1,1
1046 600,16.51
1047 178
1051 TF9J
1052 34.5,34.5,68,90
1053 15,24,144,60
1054 400,8,115
1055 8000,3,1
1056 1100,25.89
1057 399
1061 TA4J
```

TABLE 53 (Cont)

```
1062 31,31,53.2,90
1063 15,24,144,60
1064 400,8,115
1065 8000,2,1
1066 1100,37.68
1067 100
1071 TS2A
1072 34,35,46,50
1073 15,24,144,60
1074 400,8,115
1075 8000,2,1
1076 2000,14.89
1077 179
1081 THIL
1082 53,44,88,132
1083 16,24,144,48
1084 175,5,0
1085 200,1,2
1086 400,10.30
1087 0
1091 TH57
1092 43.3,37.3,74.5,111.8
1093 16,24,144,48
1094 175,5,50
1095 200,1,2
1096 115,1.61
1097 34
1101 H-34
1102 65.8,56.2,84.2,112
1103 12,20,144,24
1104 250,8,75
1105 200,1,2
1106 400,12.44
1107 86
1111 ZERØ
```

TABLE 53 (Cont)

```
1112 0,0,0,0
1113 0,0,0,0
1114 0,0,0
1115 0,0,0
1116 0,0
1117 0
1121 ZERØ
1122 0,0,0,0
1123 0,0,0,0
1124 0,0,0
1125 0,0,0
1126 0,0
1127 0
1131 ZERØ
1132 0,0,0,0
1133 0,0,0,0
1134 0,0,0
1135 0,0,0
1136 0,0
1137 0
1141 ZERØ
1142 0,0,0,0
1143 0,0,0,0
1144 0,0,0
1145 0,0,0
1146 0,0
1147 0
1151 ZERØ
1152 0,0,0,0
1153 0,0,0,0
1154 0,0,0
1155 0,0,0
1156 0,0
1157 0
1161 VF
1162 34.5,34.5,67.9,90
1163 15,24,144,60
1164 375,8,110
1165 0,2,1
1166 50300,1
```

TABLE 53 (Cont)

```
1167 0
1171 VT
1172 35.5,35.5,68,90
1173 24,48,144,96
1174 375,8,110
1175 0,1,2
1176 180000,2
1177 0
1181 VR
1182 93.9,117.5,137.5,157.5
1183 6,12,144,24
1184 350,15,125
1185 0,2,2
1186 189000,2
1187 0
1191 V0
1192 27.7,37.2,57.2,77.2
1193 24,48,144,96
1194 175,5,50
1195 0,1,2
1196 5000,2
1197 0
1201 VW
1202 40,50,65,90
1203 6,12,144,12
1204 900,50,275
1205 0,2,2
1206 360000,2
1207 0
1211 H
1212 52.2,44,66,110
1213 12,20,144,24
1214 250,8,75
1215 0,1,2
1216 18700,2
1217 0
```

TABLE 54

BASE DATA FILE DESCRIPTIONS

Character	Format	Description
NAS Name		
1	I1	The integer 1
2-3	I2	Base number (01-09) (see Table 48)
4	I1	The integer 1
6-9	A4	Four character NAS name (present names shown in Table 48)
Parking Apron Depth		
1	I1	The integer 1
2-3	I2	Base number (01-09)
4	I1	The integer 2
6-	FREE	Parking apron depth in feet
Fuel Data		
1	I1	The integer 1
2-3	I2	Base number (01-09)
4	I1	The integer 3
6-	FREE	Number of days of ready fuel storage required for jet fuel
Next	FREE	Number of days of ready fuel storage required for avgas
Next	FREE	Number of days of ready fuel storage required for helo fuel
Next	FREE	Fuel loss percentage, jet fuel (1.0 = 100 percent)
Next	FREE	Fuel loss percentage, avgas (1.0 = 100 percent)
Next	FREE	Fuel loss percentage, helo fuel (1.0 = 100 percent)

TABLE 54 (Cont)

Character	Format	Description
Classroom and Student Data		
1	I1	The integer 1
2-3	I2	Base number (01-09)
4	I1	The integer 4
6-	FREE	Annual classroom utilization in hours
Next	FREE	Class hours required annually per tenant student
Next	FREE	Average tenant student load
Tenant Data		
1	I1	The integer 1
2-3	I2	Base number (01-09)
4	I1	The integer 5
6-	FREE	Tenant officers
Next	FREE	Tenant enlisted personnel
Next	FREE	Tenant civilian personnel
Family Housing Data		
1	I1	The integer 1
2-3	I2	Base number (01-09)
4	I1	The integer 6
6-	FREE	Percent of enlisted eligible for family housing (1.0 = 100 percent)
Next	FREE	Percent of eligible enlisted requiring family housing (1.0 = 100 percent)
Next	FREE	Percent of officers requiring family housing (1.0 = 100 percent)
Next	FREE	Percent of students requiring family housing (1.0 = 100 percent)
Next	FREE	Percent of ineligible enlisted requiring family housing (1.0 = 100 percent)

TABLE 54 (Cont)

Character	Format	Descriptions
	Base Dependent Planning Factors	
1	I1	The integer 1
2-3	I2	Base number (01-09)
4	I1	The integer 7
6-	FREE	Percentage of total barrack capacity utilizing mess facilities (1.0 = 100 percent)
Next	FREE	Dispensary code (1 = with beds, 0 = without beds)
Next	FREE	Percent of total base population requiring administrative office space
	Runway Factors	
1	I1	The integer 1
2-3	I2	Base number (01-09)
4	I1	The integer 8
6-	FREE	Altitude-temperature correction factor
Next	FREE	Wind rose factor for main runway
Next	FREE	Wind rose factor for crosswind runway
	Tenant Aircraft Data	
1	I1	The integer 1
2-3	I2	Base number (01-09)
4	I1	The integer 9
6-	FREE	Number of type VF aircraft
Next	FREE	Number of type VT aircraft
Next	FREE	Number of type VR aircraft
Next	FREE	Number of type VO aircraft
Next	FREE	Number of type VW aircraft
Next	FREE	Number of type H aircraft

TABLE 55

DATA FILE BASED*

```
1011 CHAS
1012 250
1013 10,10,10,.11,.11,.09
1014 2000,0,0
1015 0,0,0
1016 .419,.825,.835,.254,.204
1017 .85,1,.1
1018 .263,.839,.086
1019 0,2,0,0,0,2
1021 CØRP
1022 600
1023 10,10,10,.11,.11,.09
1024 2000,0,0
1025 239,890,4592
1026 .513,.797,.816,.538,.225
1027 .85,1,.12
1028 .187,.839,.161
1029 11,14,0,0,0,3
1031 ELLY
1032 1200
1033 10,10,10,.11,.11,.09
1034 2000,0,0
1035 0,0,0
1036 .422,.724,.847,.569,.179
1037 .85,1,.1
1038 .188,.9,.1
1039 0,2,0,0,0,0
1041 KING
1042 300
1043 10,10,10,.11,.11,.09
1044 2000,0,0
1045 0,0,0
1046 .461,.754,.85,.469,.237
1047 .85,1,.1
1048 .231,.925,.075
1049 0,2,0,0,0,2
1051 MERI
1052 700
1053 10,10,10,.11,.11,.09
1054 2000,0,6
```

TABLE 55 (Cont)

```
1055 6,9,0
1056 .482,.885,.873,.342,.201
1057 .85,1,.1
1058 .2553,.9,.1
1059 0,2,0,0,0,2
1061 PENS
1062 420
1063 10,10,10,.11,.11,.09
1064 2000,0,0
1065 529,954,6220
1066 .422,.724,.847,.569,.179
1067 .966,0,.15
1068 .186,.9,.1
1069 2,19,8,1,1,5
1071 SAUF
1072 470
1073 10,10,10,.11,.11,.09
1074 2000,0,0
1075 0,0,0
1076 .422,.724,.847,.569,.179
1077 .827,0,.1
1078 .1893,.9,.1
1079 0,2,0,0,0,0
1081 WHIT
1082 450
1083 10,10,10,.11,.11,.09
1084 2000,0,0
1085  0.20000E+01 0.26000E+02 0.16000E+02
1086 .477,.762,.834,.476,.247
1087 .85,1,.1
1088 .231,.9,.1
1089 0,1,0,0,0,0
1091 PHAN
1092 450
1093 10,10,10,.11,.11,.09
1094 2000,0,0
1095 0,0,0
1096 .45,.78,.84,.47,.21
1097 .85,1,.1
1098 0,.9,.1
1099 0,2,0,0,0,2
```

TABLE 56

COST DATA FILE DESCRIPTIONS

Character	Format	Description
1	I1	The integer 1
2-3	I2	Internal facility number (01-30) (see Table 46)
5-	FREE	Unit investment cost in dollars
Next	FREE	Facility support factor
Next	FREE	Typical size
Next	FREE	Cost-time adjustment factor
Next	FREE	Cost-time code (this factor is not presently used in the IFRS model; hence a zero is entered for the value)
Next	FREE	Operation and maintenance cost per unit in dollars

4.27 Table 57 provides a list of the data which are currently contained in data file INVCO*.

FACILITY REQUIREMENTS COMPUTATION TABLES

4.28 The Facility Requirements Computations Table, "TABLE*", contains several tables used in the computation of base facility requirements. A list and description of the tables appears in Table 58.

4.29 Each of these data tables contains planning factors required in computing facility requirements. Should the user wish to generate new values for all these planning factors or simply modify one table, he may do so by running a program named TABGEN. This utility program is a part of the IFRS system and must be run as an independent program.

4.30 In running this program, the user is first asked to type either 1, to generate all tables in new form, or 2, to update one or more of the existing tables. If he enters 1, the program asks for all the tables, one at a time. The user then types the entire table, column by column. For example, in typing the table FAMESS, (a table with dimensions 7 and 2) the user would type 14 numbers corresponding to the elements in the array FAMESS in the following manner: (1, 1), (2, 1), (3, 1), (4, 1), (5, 1), (6, 1), (7, 1), (1, 2), (2, 2), (3, 2), (4, 2), (5, 2), (6, 2), (7, 2). Each item is separated from the next by a comma for as many lines as necessary, providing no line ends with a comma.

TABLE 57

DATA FILE INVCO*

```
101 11.83,0,0,0,0,.02
102 63360.,1,0,1,0,422.40
103 39.60,1.17,13000,1,0,.19
104 24.10,1.12,25000,1,0,.19
105 23.10,1.15,50000,1,0,.19
106 22.00,1.23,5260,1,0,.19
107 9,1.15,0,0,0,.06
108 38.00,1.14,8000,1,0,.26
109 25.40,1.12,15000,1,0,.22
110 21500,1,0,0,0,0
111 2900,1.10,0,0,0,26.25
112 37.00,1.18,16000,1,0,.21
113 10000,1.17,0,0,0,105.
114 0,0,0,0,0,0
115 25.80,1.15,21000,1,0,.16
116 26.70,1.13,16000,1,0,.16
117 330,1,0,1,0,0
118 5.75,1,0,1,0,.08
119 0,0,0,0,0,0
120 0,0,0,0,0,.08
121 71595.,0,0,1,0,986.
122 4.30,0,0,1,0,.04
123 0,0,0,0,0,0
124 0,0,0,0,0,0
125 5.15,1,0,1,0,0
126 0,0,0,0,0,0
127 11.83,0,0,0,0,.02
128 11.83,0,0,0,0,.02
129 9,1.15,0,0,0,.06
130 9,1.15,0,0,0,.06
```

TABLE 57 (Cont)

131	0, 0, 0, 0, 0, 0
132	0, 0, 0, 0, 0, 0
133	0, 0, 0, 0, 0, 0
134	0, 0, 0, 0, 0, 0
135	0, 0, 0, 0, 0, 0
136	0, 0, 0, 0, 0, 0
137	0, 0, 0, 0, 0, 0
138	0, 0, 0, 0, 0, 0
139	0, 0, 0, 0, 0, 0
140	0, 0, 0, 0, 0, 0
141	0, 0, 0, 0, 0, 0
142	0, 0, 0, 0, 0, 0
143	0, 0, 0, 0, 0, 0
144	0, 0, 0, 0, 0, 0
145	0, 0, 0, 0, 0, 0
146	0, 0, 0, 0, 0, 0
147	0, 0, 0, 0, 0, 0
148	0, 0, 0, 0, 0, 0
149	0, 0, 0, 0, 0, 0
150	0, 0, 0, 0, 0, 0

TABLE 58

FACILITY REQUIREMENTS COMPUTATIONS TABLE DESCRIPTIONS

Table	Dimension	Description
FAPW	6	Maximum total floor area of public works shop for six levels of total maintenance personnel
AP	4,3	Gross warehouse storage space factors in support of personnel
GWTAB	3	Personnel levels for determining which row of Table AP to use to determine storage requirements per man
FAMESS	7,2	Enlisted mess hall gross dining facility floor area requirement (second column) for a total mess hall capacity not exceeding value in first column
EXCH	10,2	Gross square foot area of exchange required (second column) for a total installation military strength not exceeding value in first column
FAEM	8,2	Gross area in square feet required (second column) for a total base enlisted strength not exceeding the value in first column
TANKS	15	Tank sizes available for ready fuel storage in gallons
TAXITO	3	Number of turnoffs required for runways not exceeding 5500, 7500, and 10,000 feet in length, respectively

4.31 If the user wishes to update, he specifies which table indicated in the printout is to be updated. Having specified the table, the user types that table again, column by column. Having received the update instructions, the program responds with a request for another update. Once all updates have been completed, the user types a zero when asked which table to update to order the program to save the updated tables and halt. TABLE* cannot be updated off line.

4.32 Table 59 provides a list of the data which are currently contained in data file TABLE*.

TABLE 59

DATA FILE TABLE*

0.580000E+040.109000E+050.155000E+050.195000E+050.229000E+050.257000E+05
0.150000E+020.100000E+020.500000E+010.300000E+010.200000E+010.150000E+01
0.500000E+000. 0.500000E+010.300000E+010.200000E+010.
0.400000E+040.600000E+040.800000E+040.500000E+020.150000E+030.500000E+03
0.750000E+030.125000E+040.225000E+040.225000E+040.295000E+020.230000E+02
0.170000E+020.150000E+020.150000E+020.110000E+020.100000E+020.500000E+03
0.100000E+040.300000E+040.500000E+040.700000E+040.100000E+050.150000E+05
0.200000E+050.250000E+050.300000E+050.490000E+040.772000E+040.136800E+05
0.175300E+050.225300E+050.248800E+050.305300E+050.394400E+050.434400E+05
0.458900E+050.250000E+030.500000E+030.750000E+030.120000E+040.200000E+04
0.400000E+040.500000E+040.100000E+050.250000E+040.300000E+040.700000E+04
0.100000E+050.127000E+050.198000E+050.278000E+050.556000E+050.100000E+04
0.200000E+040.400000E+040.600000E+040.100000E+050.120000E+050.200000E+05
0.300000E+050.500000E+050.210000E+060.315000E+060.420000E+060.630000E+06
0.840000E+060.105000E+070.550000E+040.750000E+040.100000E+05

V. UTILITY PROGRAMS

5.1 In addition to the programs required to run the IFRS system, four utility programs were written to provide the user with easy access to listings of the following data files.

- ACFILIST
- BAFILIST
- INFILIST
- TABGEN.

The first three programs are used, respectively, to obtain listings of the data currently stored in the Aircraft Data File (ACDAT*), the Base Data File (BASED*), and the Investment Cost Data File (INVCO*). The user obtains a listing of the data stored in these files and a description of each item when he runs the appropriate utility program.

5.2 The results of running ACFILIST, BAFILIST, and INFILIST appear in Tables 60, 61, and 62, respectively. Program TABGEN is described in the foregoing discussion of updating procedures.

TABLE 60

ACFILIST PROGRAM

TRAINING A/C	UNIT	T34B	T28C	T-2A	T2BC	TF9J	TA4J
PARKING APRØN DATA A	FT	25.8	34.5	35.5	35.5	34.5	31.0
PARKING APRØN DATA B	FT	32.8	40.6	35.5	35.5	34.5	31.0
PARKING APRØN DATA C	FT	47.8	55.6	68.0	68.0	68.0	53.2
PARKING APRØN DATA D	FT	72.8	80.6	90.0	90.0	90.0	90.0
A/C PER HANGAR MØDULE	AC	24.	24.	24.	24.	15.	15.
A/C PER CREW & EQUIP MDL	AC	48.	48.	48.	48.	24.	24.
A/C PER BASIC SHØP MDL	AC	144.	144.	144.	144.	144.	144.
A/C PER SUPPL SHØP MDL	AC	96.	96.	96.	96.	60.	60.
CØVERED WAREHØUSE SPACE	SF	175.	175.	375.	375.	400.	400.
SHED SPACE REQUIRED	SF	5.	5.	8.	8.	8.	8.
ØPEN STØRAGE REQUIRED	SF	50.	50.	110.	110.	115.	115.
RUNWAY LENGTH REQ.	LF	3000.	5000.	5000.	5000.	8000.	8000.
RUNWAY LØAD FACTØR	**	1.	1.	1.	1.	3.	2.
RUNWAY CØMPØSITIØN FACT.	**	2.	2.	1.	1.	1.	1.
INVESTMENT CØST (THØU.)	$$	40.	500.	600.	600.	1100.	1100.
Ø&M CØST PER FLIGHT HØUR	$$	2.57	5.78	13.01	16.51	25.89	37.68
INVENTØRY	UN	150.	469.	114.	178.	399.	100.

TRAINING A/C	UNIT	TS2A	THIL	TH57	H-34
PARKING APRØN DATA A	FT	34.0	53.0	43.3	65.8
PARKING APRØN DATA B	FT	35.0	44.0	37.3	56.2
PARKING APRØN DATA C	FT	46.0	88.0	74.5	84.2
PARKING APRØN DATA D	FT	50.0	132.0	111.8	112.0
A/C PER HANGAR MØDULE	AC	15.	16.	16.	12.
A/C PER CREW & EQUIP MDL	AC	24.	24.	24.	20.
A/C PER BASIC SHØP MDL	AC	144.	144.	144.	144.
A/C PER SUPPL SHØP MDL	AC	60.	48.	48.	24.
CØVERED WAREHØUSE SPACE	SF	400.	175.	175.	250.
SHED SPACE REQUIRED	SF	8.	5.	5.	8.
ØPEN STØRAGE REQUIRED	SF	115.	0.	50.	75.
RUNWAY LENGTH REQ.	LF	8000.	200.	200.	200.
RUNWAY LØAD FACTØR	**	2.	1.	1.	1.
RUNWAY CØMPØSITIØN FACT.	**	1.	2.	2.	2.
INVESTMENT CØST (THØU.)	$$	2000.	400.	115.	400.
Ø&M CØST PER FLIGHT HØUR	$$	14.89	10.30	1.61	12.44
INVENTØRY	UN	179.	0.	34.	86.

TABLE 60 (Cont)

TENANT A/C	UNIT	VF	VT	VR	V0	VW	H
PARKING APRON DATA A	FT	34.5	35.5	93.9	27.7	40.0	52.2
PARKING APRON DATA B	FT	34.5	35.5	117.5	37.2	50.0	44.0
PARKING APRON DATA C	FT	67.9	68.0	137.5	57.2	65.0	66.0
PARKING APRON DATA D	FT	90.0	90.0	157.5	77.2	90.0	110.0
A/C PER HANGAR MODULE	AC	15.	24.	6.	24.	6.	12.
A/C PER CREW & EQUIP MDL	AC	24.	48.	12.	48.	12.	20.
A/C PER BASIC SHOP MDL	AC	144.	144.	144.	144.	144.	144.
A/C PER SUPPL SHOP MDL	AC	60.	96.	24.	96.	12.	24.
COVERED WAREHOUSE SPACE	SF	375.	375.	350.	175.	900.	250.
SHED SPACE REQUIRED	SF	8.	8.	15.	5.	50.	8.
OPEN STORAGE REQUIRED	SF	110.	110.	125.	50.	275.	75.
RUNWAY LOAD FACTOR	**	2.	1.	2.	1.	2.	1.
RUNWAY COMPOSITION FACT.	**	1.	2.	2.	2.	2.	2.
ANNUAL FUEL (THOUS.)	GA	50.	180.	189.	5.	360.	19.
FUEL TYPE 1-JET 2=AGAS	**	1.	2.	2.	2.	2.	2.

TABLE 61

BAFILIST PROGRAM

NAS		CHAS	CØRP	ELLY	KING	MERI	PENS	SAUF	WHIT
PARKING APRØN DEPTH		250.	600.	1200.	300.	700.	420.	470.	450.
DAYS ØF READY FUEL STØRAGE:									
	JET	10.	10.	10.	10.	10.	10.	10.	10.
	AGAS	10.	10.	10.	10.	10.	10.	10.	10.
	HELØ	10.	10.	10.	10.	10.	10.	10.	10.
FUEL LØSS FACTØRS:									
	JET	.11	.11	.11	.11	.11	.11	.11	.11
	AGAS	.11	.11	.11	.11	.11	.11	.11	.11
	HELØ	.09	.09	.09	.09	.09	.09	.09	.09
ANNUAL CLASS UTILIZ.		2000.	2000.	2000.	2000.	2000.	2000.	2000.	2000.
TENANT DATA:									
ANNUAL CLASS HRS		0.	0.	0.	0.	0.	0.	0.	0.
STUDENTS		0.	0.	0.	0.	6.	0.	0.	0.
ØFFICERS		0.	239.	0.	0.	6.	529.	0.	2.
ENLISTED		0.	890.	0.	0.	9.	954.	0.	26.
CIVILIAN		0.	4592.	0.	0.	0.	6220.	0.	16.
HØUSING DATA:									
%ELLIGIBLE ENLISTED		.419	.513	.422	.461	.482	.422	.422	.477
%ENL. REQ. HØUSING		.825	.797	.724	.754	.885	.724	.724	.762
%ØFF. REQ. HØUSING		.835	.816	.847	.850	.873	.847	.847	.834
%STU. REQ. HØUSING		.254	.538	.569	.469	.342	.569	.569	.476
%INELLIG. ENLISTED		.204	.225	.179	.237	.201	.179	.179	.247
MESS HALL FACTØR		.85	.85	.85	.85	.85	.97	.83	.85
DISPENSARY 1=W/BEDS		1	1	1	1	1	0	0	1
%BASE REQ. ADMIN ØFF		.10	.12	.10	.10	.10	.15	.10	.10
ALT-TEMP CØRRECTIØN		.26	.19	.19	.23	.26	.19	.19	.23
WINDRØSE DATA MAIN		.84	.84	.90	.92	.90	.90	.90	.90
CRØSSWIND		.09	.16	.10	.08	.10	.10	.10	.10
TENANT A/C	VF	0.	11.	0.	0.	0.	2.	0.	0.
	VT	2.	14.	2.	2.	2.	19.	2.	1.
	VR	0.	0.	0.	0.	0.	8.	0.	0.
	VØ	0.	0.	0.	0.	0.	1.	0.	0.
	VW	0.	0.	0.	0.	0.	1.	0.	0.
	H	2.	3.	0.	2.	2.	5.	0.	0.

TABLE 61 (Cont)

NAS		PHAN
PARKING APRØN DEPTH		450.
DAYS ØF READY FUEL STØRAGE:		
	JET	10.
	AGAS	10.
	HELØ	10.
FUEL LØSS FACTØRS:		
	JET	.11
	AGAS	.11
	HELØ	.09
ANNUAL CLASS UTILIZ.		2000.
TENANT DATA:		
ANNUAL CLASS HRS		0.
STUDENTS		0.
ØFFICERS		0.
ENLISTED		0.
CIVILIAN		0.
HØUSING DATA:		
%ELLIGIBLE ENLISTED		.450
%ENL. REQ. HØUSING		.780
%ØFF. REQ. HØUSING		.840
%STU. REQ. HØUSING		.470
%INELLIG. ENLISTED		.210
MESS HALL FACTØR		.85
DISPENSARY 1=W/BEDS		1
%BASE REQ. ADMIN ØFF		.10
ALT-TEMP CØRRECTIØN		.
WINDRØSE DATA MAIN		.90
CRØSSWIND		.10
TENANT A/C	VF	0.
	VT	2.
	VR	0.
	VØ	0.
	VW	0.
	H	2.

TABLE 62

INFILIST PROGRAM

FACILITY	UNIT CØST	FACILITY SUPPØRT FACTØR	TYPICAL SIZE	CØST-TIME ADJUSTMENT FACTØR	CØST TIME CØDE	Ø&M CØST/UNIT
1	11.83	0.	0.	0.	0.	0.02
2	63360.00	1.00	0.	1.00	0.	422.40
3	39.60	1.17	13000.	1.00	0.	0.19
4	24.10	1.12	25000.	1.00	0.	0.19
5	23.10	1.15	50000.	1.00	0.	0.19
6	22.00	1.23	5260.	1.00	0.	0.19
7	9.00	1.15	0.	0.	0.	0.06
8	38.00	1.14	8000.	1.00	0.	0.26
9	25.40	1.12	15000.	1.00	0.	0.22
10	21500.00	1.00	0.	0.	0.	0.
11	2900.00	1.10	0.	0.	0.	26.25
12	37.00	1.18	16000.	1.00	0.	0.21
13	10000.00	1.17	0.	0.	0.	105.00
14	0.	0.	0.	0.	0.	0.
15	25.80	1.15	21000.	1.00	0.	0.16
16	26.70	1.13	16000.	1.00	0.	0.16
17	330.00	1.00	0.	1.00	0.	0.
18	5.75	1.00	0.	1.00	0.	0.08
19	0.	0.	0.	0.	0.	0.
20	0.	0.	0.	0.	0.	0.08
21	71595.00	0.	0.	1.00	0.	986.00
22	4.30	0.	0.	1.00	0.	0.04
23	0.	0.	0.	0.	0.	0.
24	0.	0.	0.	0.	0.	0.
25	5.15	1.00	0.	1.00	0.	0.
26	0.	0.	0.	0.	0.	0.
27	11.83	0.	0.	0.	0.	0.02
28	11.83	0.	0.	0.	0.	0.02
29	9.00	1.15	0.	0.	0.	0.06
30	9.00	1.15	0.	0.	0.	0.06